3.3. AIR QUALITY AND CLIMATE CHANGE

The following discussion is based on the Air Quality Assessment prepared for the project by Illingworth & Rodkin in September 2017, which is incorporated into this EIR by reference, as provided under CEQA Guidelines Section 15150. The air quality report is contained in Appendix C of this EIR, and its findings are summarized below.

3.3.1. ENVIRONMENTAL AND REGULATORY SETTING

Westlands Solar Park and Transmission Corridors

Air Basin Characteristics

Topography

The WSP and transmission corridors are located in the southwestern portion of the San Joaquin Valley Air Basin. The Valley is surrounded on three sides by topographic features that restrict air movement through and out of the basin and, as a result, impede the dispersion of air pollutants from the basin. The flow is further restricted vertically by inversion layers that are common in the San Joaquin Valley air basin throughout the year. An inversion layer is created when a mass of warm dry air sits over cooler air near the ground, preventing vertical dispersion of pollutants from the air mass below. These inversions lead to a buildup of ozone and ozone precursor pollutants.

Climate

The climate of the WSP area is characterized by hot dry summers and cool, mild winters. Daytime temperatures in the summer often approach or exceed 100 degrees, with lows in the 60s. In the winter, daytime temperatures are usually in the 50s, with lows around 35 degrees. Radiation fog is common in the winter, and may persist for days. Winds are predominantly up-valley (flowing from the north) in all seasons, but more so in the summer and spring months. This type of flow is usually trapped below marine and subsidence inversions, restricting outflow through the Sierra Nevada and Tehachapi Mountains.

The pollution potential of the San Joaquin Valley is very high. The San Joaquin Valley has one of the most severe air pollution problems in the State and the nation. Surrounding elevated terrain in conjunction with temperature inversions frequently restrict lateral and vertical dilution of pollutants. Abundant sunshine and warm temperatures in late spring, summer, and early fall are ideal conditions for the formation of ozone, where the Valley frequently experiences unhealthy air pollution days. Low wind speeds, combined with low inversion layers in the winter, create a climate conducive to high respirable particulate matter (PM_{10}) concentrations and elevated carbon monoxide (CO) levels.

Air Quality Regulations and Standards

The Federal and California Clean Air Acts have established ambient air quality standards for different pollutants. National ambient air quality standards (NAAQS) were established by the Federal Clean Air Act of 1970 (amended in 1977 and 1990) for six "criteria" pollutants. These criteria pollutants now include carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), respirable particulate matter with a diameter less than 10 microns (PM_{10}), sulfur dioxide ($S0_2$), and lead (Pb). In 1997, the United States Environmental Protection Agency (US EPA) added fine particulate matter ($PM_{2.5}$) as a criteria pollutant. The air pollutants for which standards have been established are considered the most prevalent air pollutants that are known to be hazardous to human health. California ambient air quality standards (CAAQS) include the NAAQS pollutants and also hydrogen sulfide, sulfates, vinyl chloride, and visibility reducing particles. These additional CAAQS pollutants tend to have unique sources and are not typically examined in environmental air quality assessments. In addition, lead concentrations have decreased dramatically since it was removed from motor vehicle fuels.

Federal Regulations

At the federal level, the US EPA administers and enforces air quality regulations. Federal air quality regulations were developed primarily from implementation of the Federal Clean Air Act. If an area does not meet NAAQS over a set period (three years), EPA designates it as a "nonattainment" area for that particular pollutant. EPA requires states that have areas that do not comply with the national standards to prepare and submit air quality plans showing how the standards would be met. If the states cannot show how the standards would be met, then they must show progress toward meeting the standards. These plans are referred to as the State Implementation Plan (SIP). Under severe cases, EPA may impose a federal plan to make progress in meeting the federal standards.

The US EPA also has programs for identifying and regulating hazardous air pollutants. The Clean Air Act requires US EPA to set standards for these pollutants and sharply reduce emissions of controlled chemicals. Industries were classified as major sources if they emitted certain amounts of hazardous air pollutants. The US EPA also sets standards to control emissions of hazardous air pollutants through mobile source control programs. These include programs that reformulated gasoline, national low emissions vehicle standards, Tier 2 motor vehicle emission standards, gasoline sulfur control requirements, and heavy-duty engine standards.

The San Joaquin Valley Air Basin is subject to major air quality planning programs required by the federal Clean Air Act (CAA) to address ozone, particulate matter air pollution, and carbon monoxide. The CAA requires that regional planning and air pollution control agencies prepare a regional Air Quality Plan to outline the measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve all standards within the deadlines specified in the Clean Air Act. These plans are submitted to the State, which after approval, submits them to US EPA as the State Implementation Plan (SIP).

State Regulations

The California Clean Air Act of 1988, amended in 1992, outlines a program for areas in the State to attain the CAAQS by the earliest practical date. The California Air Resources Board (CARB) is the state air pollution control agency and is a part of the California EPA. The California Clean Air Act (CCAA) sets more stringent air quality standards for all of the pollutants covered under national standards, and

additionally regulates levels of vinyl chloride, hydrogen sulfide, sulfates, and visibility-reducing particulates. If an area does not meet CAAQS, CARB designates the area as a nonattainment area. The San Joaquin Valley Air Basin does not meet the CAAQS for ozone, PM_{10}, and $PM_{2.5}$. CARB requires regions that do not meet CAAQS for ozone to submit clean air plans that describe plans to attain the standard or show progress toward attainment.

In addition to the US EPA, CARB further regulates the amount of air pollutants that can be emitted by new motor vehicles sold in California. Motor vehicle emissions standards have always been more stringent than federal standards since they were first imposed in 1961. CARB has also developed Inspection and Maintenance (I/M) and "Smog Check" programs with the California Bureau of Automotive Repair. Inspection programs for trucks and buses have also been implemented. CARB also sets standards for motor vehicle fuels sold in California.

San Joaquin Valley

The San Joaquin Valley Air Pollution Control District (SJVAPCD) is made up of eight counties in California's Central Valley: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and the San Joaquin Valley portion of Kern County. The primary role of the SJVAPCD is to develop plans and implement control measures in the San Joaquin Valley to control air pollution. These controls primarily affect stationary sources such as industry and power plants. Rules and regulations have been developed by SJVAPCD to control air pollution from a wide range of air pollution sources. In March 2007, an Indirect Source Review (ISR) rule was adopted that controls air pollution from new land development projects. SJVAPCD also conducts public education and outreach efforts such as the Spare the Air, Wood Burning, and Smoking Vehicle voluntary programs.

National and State Ambient Air Quality Standards

The CAA and CCAA promulgate, respectively, national and state ambient air quality standards. Air quality standards have been established by US EPA (i.e., NAAQS) and California (i.e., CAAQS) for specific air pollutants most pervasive in urban environments. The NAAQS and CAAQS are shown in Table AQ-1. Ambient standards specify the concentration of pollutants to which the public may be exposed without adverse health effects. Individuals vary widely in their sensitivity to air pollutants, and standards are set to protect more pollution-sensitive populations (e.g., children and the elderly). National and state standards are reviewed and updated periodically based on new health studies. California ambient standards tend to be at least as protective as national ambient standards and are often more stringent. For planning purposes, regions like the San Joaquin Valley Air Basin are given an air quality status designation by the federal and state regulatory agencies. Areas with monitored pollutant concentrations that are lower than ambient air quality standards are designated "attainment" on a pollutant-by-pollutant basis. When monitored concentrations exceed ambient standards within an air basin, it is designated "nonattainment" for that pollutant. US EPA designates areas as "unclassified" when insufficient data are available to determine the attainment status; however, these areas are typically considered to be in attainment of the standard.

TABLE AQ-1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards Concentration	National Standards Concentration
Ozone	1-hour	0.09 ppm (180 µg/m^3)	—
	8-hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3) (3-year average of annual 4th highest daily maxima)
Carbon Monoxide	8-hour	9.0 ppm (10,000 µg/m^3)	9 ppm (10,000 µg/m^3)
	1-hour	20 ppm (23,000 µg/m^3)	35 ppm (40,000 µg/m^3)
Nitrogen dioxide	Annual Average	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)
	1-hour	0.18 ppm (339 µg/m^3)	0.100 ppm (188 µg/m^3) (3-year average of annual 98th percentile daily maxima)
Sulfur dioxide	Annual	-	Not applicable in SJV
	24-hour	0.04 ppm (105 µg/m^3)	Not applicable in SJV
	3-hour	—	0.5 ppm (1,300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3) (3-year average of annual 99th percentile daily maxima)
Respirable particulate matter (10 micron)	24-hour	50 µg/m^3	150 µg/m^3
	Annual Arithmetic Mean	20 µg/m^3	—
Fine particulate matter (2.5 micron)	Annual Arithmetic Mean	12 µg/m^3	12.0 µg/m^3 (3-year average)
	24-hour	—	35 µg/m^3 (3-year average of annual 98th percentile daily concentrations)
Sulfates	24-hour	25 µg/m^3	—
Lead	30-day	1.5 µg/m^3	—
	3 Month Rolling Average	—	0.15 µg/m^3

Source: CARB 2016.
SO_2 Federal 24 hour and annual standards are not applicable in the SJVAPCD.
µg/m^3 = micrograms per cubic meter
ppm = parts per million

Criteria Air Pollutants and their Health Effects

The primary criteria air pollutants that would be emitted by the WSP projects include ozone (O_3) precursors (NO_x and ROG), carbon monoxide (CO), and suspended particulate matter (PM_{10} and $PM_{2.5}$). Other criteria pollutants, such as lead (Pb) and sulfur dioxide (SO_2), would not be substantially emitted by the WSP projects or traffic, and air quality standards for them are being met throughout the San Joaquin Valley Air Basin.

Ozone (O_3)

While O_3 serves a beneficial purpose in the upper atmosphere (stratosphere) by reducing ultraviolet radiation potentially harmful to humans, when it reaches elevated concentrations in the lower atmosphere it can be harmful to the human respiratory system and to sensitive species of plants. O_3 concentrations build to peak levels during periods of light winds, bright sunshine, and high temperatures. Research has shown that exposure to ozone damages the alveoli (the individual air sacs in the lung where the exchange of oxygen and carbon dioxide between the air and blood takes place). Ozone is a strong irritant that attacks the respiratory system, leading to the damage of lung tissue. Short-term O_3 exposure can reduce lung function in children, make persons susceptible to respiratory infection, and produce symptoms that cause people to seek medical treatment for respiratory distress. Long-term exposure can impair lung defense mechanisms and lead to emphysema and chronic bronchitis. A healthy person exposed to high concentrations may become nauseated or dizzy, may develop headache or cough, or may experience a burning sensation in the chest. Sensitivity to O_3 varies among individuals, but about 20 percent of the population is sensitive to O_3, with exercising children being particularly vulnerable.

O_3 is formed in the atmosphere by a complex series of photochemical reactions that involve "ozone precursors" that consist of two families of pollutants: oxides of nitrogen (NO_x) and reactive organic gases (ROG). NO_x and ROG are emitted from a variety of stationary and mobile sources. While NO_2, an oxide of nitrogen, is another criteria pollutant itself, ROGs are not in that category, but are included in this discussion as O_3 precursors. Recently, CARB adopted an 8-hour health based standard for O_3 of 0.070 ppm. More recently, US EPA revised the 8-hour NAAQS for O_3 from 0.08 ppm to 0.075 ppm.

Carbon Monoxide (CO)

CO is a colorless, odorless, poisonous gas. Carbon monoxide's health effects are related to its affinity for hemoglobin in the blood. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause dizziness and fatigue, and causes reduced lung capacity, impaired mental abilities and central nervous system function, and induces angina in persons with serious heart disease. Primary sources of CO in ambient air are passenger cars, light-duty trucks, and residential wood burning. The monitored CO levels in the Valley during the last 10 years have been well below ambient air quality standards.

Nitrogen Dioxide (NO_2)

The major health effect from exposure to high levels of NO_2 is the risk of acute and chronic respiratory disease. NO_2 is a combustion by-product, but it can also form in the atmosphere by chemical reaction. NO_2 is a reddish-brown colored gas often observed during the same conditions that produce high levels of O_3 and can affect regional visibility. NO_2 is one compound in a group of compounds consisting of

oxides of nitrogen (NO_x). As described above, NO_x is an O_3 precursor compound. Monitored levels of NO_2 in the Valley are below ambient air quality standards.

Particulate Matter (PM)

Respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$) consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. PM_{10} and $PM_{2.5}$ represent fractions of particulate matter that can be inhaled and cause adverse health effects. PM_{10} and $PM_{2.5}$ are a health concern, particularly at levels above the Federal and State ambient air quality standards. $PM_{2.5}$ (including diesel exhaust particles) is thought to have greater effects on health because minute particles are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Children are more susceptible to the health risks of $PM_{2.5}$ because their immune and respiratory systems are still developing. These fine particulates have been demonstrated to decrease lung function in children. Certain components of PM are linked to higher rates of lung cancer. Very small particles of certain substances (e.g., sulfates and nitrates) can also directly cause lung damage or can contain absorbed gases (e.g., chlorides or ammonium) that may be injurious to health.

Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as mining and demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. In addition to health effects, particulates also can damage materials and reduce visibility. Dust comprised of large particles (diameter greater than 10 microns) settles out rapidly and is more easily filtered by human breathing passages. This type of dust is considered more of a soiling nuisance rather than a health hazard.

In 1983, CARB replaced the standard for "suspended particulate matter" with a standard for suspended PM_{10} or "respirable particulate matter." The current PM_{10} standard is 20 micrograms per cubic meter ($\mu g/m^3$) for an annual average. $PM_{2.5}$ standards were first promulgated by the EPA in 1997 and were since revised to lower the 24-hour $PM_{2.5}$ standard to 35 $\mu g/m^3$ for 24-hour exposures. That same action by EPA revoked the annual PM_{10} standard due to lack of scientific evidence correlating long-term exposures of ambient PM_{10} with health effects. CARB has only adopted an annual average $PM_{2.5}$ standard, which is set at 12 $\mu g/m^3$. This is equal to the NAAQS of 12 $\mu g/m^3$.

Toxic Air Contaminants

Besides the "criteria" air pollutants, there is another group of substances found in ambient air referred to as Hazardous Air Pollutants (HAPs) under the Federal Clean Air Act and Toxic Air Contaminants (TACs) under the California Clean Air Act. These contaminants tend to be localized and are found in relatively low concentrations in ambient air. However, they can result in adverse chronic health effects if exposure to low concentrations occurs for long periods. They are regulated at the local, state, and federal level.

HAPs are the air contaminants identified by US EPA as known or suspected to cause cancer, serious illness, birth defects, or death. Many of these contaminants originate from human activities, such as fuel combustion and solvent use. Mobile source air toxics (MSATs) are a subset of the 188 HAPS. Of the 21 HAPs identified by EPA as MSATs, a priority list of six priority HAPs were identified that include: diesel

exhaust, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. While vehicle miles traveled in the United States is expected to increase by 64% over the period 2000 to 2020, emissions of MSATs are anticipated to decrease substantially as a result of efforts to control mobile source emissions (by 57% to 67% depending on the contaminant).

California developed a program under the Tanner Toxics Act (Assembly Bill [AB] 1807) to identify, characterize and control TACs. Subsequently, AB 2728 incorporated all 188 HAPs into the AB 1807 process. TACs include all HAPs plus other containments identified by CARB. These are a broad class of compounds known to cause morbidity or mortality (cancer risk). TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

Particulate matter from diesel exhaust is the predominant TAC in urban air and is estimated to represent about 70 percent of the cancer risk from TACs (based on the statewide average). According to CARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by ARB, and are listed as carcinogens either under State Proposition 65 or under the Federal Hazardous Air Pollutants programs.

CARB reports that recent air pollution studies have shown an association that diesel exhaust and other cancer-causing toxic air contaminants emitted from vehicles are responsible for much of the overall cancer risk from TACs in California. Particulate matter emitted from diesel-fueled engines (diesel particulate matter [DPM]) was found to comprise much of that risk. In August 1998, CARB formally identified DPM as a TAC. Diesel particulate matter is of particular concern since it can be distributed over large regions, thus leading to widespread public exposure. The particles emitted by diesel engines are coated with chemicals, many of which have been identified by EPA as HAPs, and by CARB as TACs. Diesel engines emit particulate matter at a rate about 20 times greater than comparable gasoline engines. The vast majority of diesel exhaust particles (over 90 percent) consist of $PM_{2.5}$, which are the particles that can be inhaled deep into the lung. Like other particles of this size, a portion will eventually become trapped within the lung possibly leading to adverse health effects. While the gaseous portion of diesel exhaust also contains TACs, CARB's 1998 action was specific to DPM, which accounts for much of the cancer-causing potential from diesel exhaust. California has adopted a comprehensive diesel risk reduction program to reduce DPM emissions 85 percent by 2020. The U.S. EPA and CARB adopted low sulfur diesel fuel standards in 2006 that reduce diesel particulate matter substantially. Between 2006 and 2012, statewide ambient DPM concentrations were reduced almost 50 percent.

Smoke from residential wood combustion can be a source of TACs. Wood smoke is typically emitted during winter when dispersion conditions are poor. Localized high TAC concentrations can result when cold stagnant air traps smoke near the ground and, with no wind the pollution can persist for many hours, especially in sheltered valleys during winter. Wood smoke also contains a significant amount of PM_{10} and $PM_{2.5}$. Wood smoke is an irritant and is implicated in worsening asthma and other chronic lung problems.

Exposure to TACs is usually evaluated in terms of health risk or cancer risk. For cancer health effects, the risk is expressed as the number of chances in a population of a million people who might be expected to get cancer over a 70-year lifetime. Based on CARB's 2012 estimates of statewide exposure, DPM is estimated to increase statewide cancer risk by 520 cancers per million residents exposed over a lifetime.

Existing Air Quality

As previously discussed, the San Joaquin Valley experiences poor air quality conditions, due primarily to elevated levels of ozone and particulate matter. CARB, in cooperation with SJVAPCD, monitors air quality throughout the San Joaquin Valley Air Basin. Monitoring data presented in Table AQ-2 was derived for each pollutant based upon the closest monitoring station to the project site.

TABLE AQ-2
SUMMARY OF CRITERIA AIR POLLUTION MONITORING DATA

Pollutant	Standard	Monitoring Site	Monitored Values		
			2014	2015	2016
Ozone (ppm)	State 1-Hour	Hanford	0.108	0.119	0.097
Ozone (ppm)	State 8-Hour	Hanford	0.095	0.094	0.088
Ozone (ppm)	Federal 8-Hour	Hanford	0.094	0.094	0.088
PM_{10} (ug/m3)	Federal 24-Hour	Hanford	131	137	152
PM_{10} (ug/m3)	State 24-Hour	Hanford	126	109	110
$PM_{2.5}$ (ug/m3)	Federal 24-Hour	Hanford	96.7	98.2	59.7
Carbon Monoxide (ppm)	State/Federal 8-Hour	Air Basin Average	ND	ND	ND
Nitrogen Dioxide (ppb)	State 1-Hour	Hanford	50	51	52

Ozone

In California, ozone concentrations are generally lower near the coast than inland. The inland regions, such as the San Joaquin Valley, typically experience some of the higher ozone concentrations. This is because of the greater frequency of hot days and stagnant conditions that are conducive to ozone formation. Some areas of the Valley lie downwind of urban areas that are a source of ozone precursor pollutants.

Particulate Matter ($PM_{2.5}$ and PM_{10})

Most areas of California have either 24-hour or annual PM_{10} concentrations that exceed the State standards. Most urban areas exceed the State annual standard and the 24-hour federal standard. In the San Joaquin Valley, there is a strong seasonal variation in PM, with higher PM_{10} and $PM_{2.5}$ concentrations occurring in the fall and winter months. These higher concentrations are caused by increased activity for some emission sources and meteorological conditions that are conducive to the build-up of particulate matter. Industry and motor vehicles consistently emit particulate matter. Seasonal sources of particulate matter in San Joaquin Valley include wildfires, agricultural activities, windblown dust, and residential wood burning. In California, area sources, which primarily consist of fugitive dust, account for the majority of directly emitted particulate matter. This includes dust from paved and unpaved roads. CARB estimates that 85 percent of directly emitted PM_{10} and 66 percent of directly emitted $PM_{2.5}$ is from area sources. During the winter, the $PM_{2.5}$ size fraction makes up much of the total particulate matter concentrations. The major contributor to high levels of ambient $PM_{2.5}$ is the secondary formation of particulate matter caused by the reaction of NO_x and ammonium to form ammonium nitrate. CARB estimates that the secondary portion of $PM_{2.5}$ makes up about 50 percent of the annual concentrations in the San Joaquin Valley. The San Joaquin Valley also records high PM_{10} and $PM_{2.5}$ levels during the fall.

Carbon Monoxide

State and federal standards for carbon monoxide are met throughout California as a result of cleaner vehicles and fuels that were reformulated in the 1990s. For CO, the monitored value used was the air basin average data, as this value most likely represents the average air quality in the WSP area.

Other Pollutants

Air monitoring data indicate that the San Joaquin Valley meets ambient air quality standards all other air pollutants.

Air Quality Trends

Air quality in the Valley has improved significantly despite a natural low capacity for pollution, created by unique geography, topography, and meteorology. Emissions have been reduced at a rate similar or better than other areas in California. Since 1990, emissions of ozone precursors (i.e., NO_x and ROG) have been reduced by 40 percent or greater, resulting in much fewer days where ozone standards have been exceeded. Direct emissions of PM_{10} and $PM_{2.5}$ have been reduced by 10 to 13 percent. As a result, the San Joaquin Valley is the first air basin that was previously classified as "serious nonattainment" under the NAAQS to come into attainment of the PM_{10} standards.

Attainment Status

Areas that do not violate ambient air quality standards are considered to have attained the standard. Violations of ambient air quality standards are based on air pollutant monitoring data and are judged for each air pollutant. The San Joaquin Valley as a whole does not meet State or federal ambient air quality standards for ground level O_3 or State standards for PM_{10} and $PM_{2.5}$. The attainment status for the Valley with respect to various pollutants of concern is described in Table AQ-3.

TABLE AQ-3
WSP AREA ATTAINMENT STATUS

Pollutant	Federal Status	State Status
Ozone (O_3) – 1-Hour Standard	No Federal Standard	Severe Nonattainment
Ozone (O_3) – 8-Hour Standard	Extreme Nonattainment	Nonattainment
Respirable Particulate Matter (PM_{10})	Attainment-Maintenance	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide (NO_2)	Attainment/Unclassified	Attainment
Sulfur Dioxide (SO_2)	Attainment/Unclassified	Attainment
Sulfates and Lead	No Federal Standard	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Visibility Reducing Particles	No Federal Standard	Unclassified

Under the Federal Clean Air Act, the US EPA has classified the region as *extreme nonattainment* for the 8-hour O_3 standard. The Valley has attained the NAAQS for PM_{10}. The Valley is designated *nonattainment* for the older 1997 $PM_{2.5}$ NAAQS. SJVAPCD has determined, based on the 2004-06 $PM_{2.5}$ data, that the Valley has attained the 1997 24-Hour $PM_{2.5}$ standard; however, US EPA recently designated the Valley as nonattainment for the newer 2006 24-hour $PM_{2.5}$ standard. The US EPA classifies the region as *attainment* or *unclassified* for all other air pollutants, which include CO and NO_2.

At the State level, the region is considered *severe non-attainment* for ground level O_3 and *non-attainment* for PM_{10} and $PM_{2.5}$. California ambient air quality standards are more stringent than the national ambient air quality standards. The region is required to adopt plans on a triennial basis that show progress towards meeting the State O_3 standard. The area is considered attainment or unclassified for all other pollutants.

Regional Air Quality Plans

In response to not meeting the NAAQS, the region is required to submit attainment plans to US EPA through the State, which are referred to as State Implementation Plans (SIP).

CARB submitted the 2004 Extreme Ozone Attainment Demonstration Plan to EPA in 2004, which addressed the old 1-hour NAAQS. The region's 2007 Ozone Plan (Plan), addressing the 8-hour ozone NAAQS, was submitted to US EPA and approved in March 2012. The Plan predicts attainment of the standard throughout 90 percent of the Air District by 2020 and the entire District by 2024. To accomplish these goals, the plan would reduce NO_x emissions further by 75 percent and ROG emissions by 25 percent. A wide variety of control measures are included in these plans, such as reducing or offsetting emissions from construction and traffic associated with land use developments. The air basin was recently designated by US EPA as an extreme ozone nonattainment area for the more stringent

2008 8-hour ozone NAAQS. The Plan to address this standard was adopted by the District's Governing Board in June 2016. Addressing the 2008 8-hour ozone standard will pose a tremendous challenge for the Valley, given the naturally high background ozone levels and ozone transport into the Valley.

The SJVAPCD's 2012 $PM_{2.5}$ Plan on was approved by CARB 2013. This plan predicts that the Valley will attain the 2006 $PM_{2.5}$ NAAQS by the 2019 deadline. The plan uses control measures to reduce NOx, which also leads to fine particulate formation in the atmosphere. The plan incorporates measures to reduce direct emissions of $PM_{2.5}$, including a strengthening of regulations for various Air Basin industries and the general public through new rules and amendments.

Both the ozone and $PM_{2.5}$ plans include all measures (i.e., federal, state and local) that would be implemented through rule making or program funding to reduce air pollutant emissions. Transportation Control Measures (TCMs) are part of these plans. The plans described above addressing ozone also meet the state planning requirements.

SJVAPCD Rules and Regulations

The SJVAPCD has adopted rules and regulations that apply to land use projects, such as the WSP solar projects. These are described below.

Indirect Source Review (ISR) Rule

On December 15, 2005, the SJVAPCD adopted the Indirect Source Review Rule (ISR or Rule 9510) to reduce ozone precursor (i.e., ROG and NO_x) and PM_{10} emissions from new land use development projects. The rule is the result of state requirements outlined in the region's portion of the State Implementation Plan (SIP). The SJVAPCD's SIP commitments are contained in the 2004 Extreme Ozone Attainment Demonstration Plan and the 2003 PM_{10} Plan. These plans identified the need to reduce PM_{10} and NO_x substantially in order to attain and maintain the ambient air-pollution standards on schedule.

New projects that would generate substantial air pollutant emissions are subject to this rule. The rule requires projects to mitigate both construction and operational period emissions by applying the SJVAPCD-approved mitigation measures and paying fees to support programs that reduce emissions. The rule establishes minimum floor areas for various types of development (i.e., commercial, industrial, office, etc.) for which ISR compliance is required. For land uses not specifically identified, such as solar projects, the minimum floor area is 9,000 square feet. Since the WSP solar projects would each exceed 9,000 feet, this rule would be applicable to each WSP solar project. The rule requires mitigated exhaust emissions during construction based on the following levels:

- 20% reduction from unmitigated baseline in total NO_x exhaust emissions
- 45% reduction from unmitigated baseline in total PM_{10} exhaust emissions

For operational emissions, Rule 9510 requires the following reductions:

- 33.3% of the total operational NO_x emissions from unmitigated baseline
- 50% of the total operational PM_{10} exhaust emissions from unmitigated baseline

Fees apply to the unmitigated portion of the emissions and are based on estimated costs to reduce the emissions from other sources plus estimated costs to cover administration of the program. In accordance with ISR, each WSP solar project will be required to submit an Air Impact Assessment (AIA) to the Air District prior to submittal of the last discretionary permit application to Kings County.

Regulation VIII – Fugitive PM_{10}

SJVAPCD controls fugitive PM_{10} through Regulation VIII (Fugitive PM_{10} Prohibitions). The purpose of this regulation is to reduce ambient concentrations of PM_{10} by requiring actions to prevent, reduce or mitigate anthropogenic (human caused) fugitive dust emissions. This applies to activities such as construction, bulk materials, open areas, paved and unpaved roads, material transport, and agricultural areas. Sources regulated are required to provide dust control plans for Air District approval that meet the regulation requirements. Fees are collected by SJVAPCD to cover costs for reviewing plans and conducting field inspections.

Other SJVAPCD Regulation

The solar generating facilities and gen-tie projects constructed within the plan area may be subject to other District rules such as: Rule 4102 (Nuisance), Rule 4601 (Architectural Coatings), and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations).

Sensitive Receptors

"Sensitive receptors" are defined as facilities where sensitive population groups, such as children, the elderly, the acutely ill, and the chronically ill, are likely to be located. These land uses include schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, medical clinics, and residential areas. Worker locations are typically not considered sensitive receptors. The sensitive receptors within about one mile of the WSP and transmission corridors listed in Table AQ-4 below.

Westlands Solar Park

As shown in Table AQ-4, there are several sensitive receptors within one mile of the project boundaries, all of which consist of residences. Immediately adjacent to the WSP plan area, there are about 20 residential dwellings at Shannon Ranch near Lincoln/Gale Avenue and Avenal Cutoff Road, and two residential dwellings at Stone Land Company Ranch along Nevada Avenue, east of Avenal Cutoff Road. The next nearest residences consist of two ranch complexes with a total of 6 dwellings on the east side of Highway 41 near Nevada Avenue. To the northeast, between the Kings River and the east WSP boundary, there are a series of 4 residences along and near 22nd Avenue which runs north-south approximately one mile east of the WSP boundary. The nearest schools are located at least 3 miles from the WSP Plan Area in Lemoore and Stratford, and the nearest hospital is located 3 miles northeast at Naval Air Station Lemoore. In total, there are 32 sensitive receptors within 1 mile of the Westlands Solar Park, of which 22 are located within 1,000 feet of the WSP boundaries. (The locations of these sensitive receptors are shown in Figure PD-2 in Chapter *2. Project Description*.)

WSP Gen-Tie Corridors

Along the full 23.0-mile length of the WSP gen-tie corridors, there are 20 rural dwellings located within one mile of the corridor boundaries. Of this total, 10 rural dwellings are located within 1,000 feet of the corridor boundaries. These sensitive receptors are listed in Table AQ-4 below by gen-tie segment, including receptors located within one mile, and of those, the receptors located within 1,000 feet of the corridor boundaries. (The sensitive receptor locations are shown in Figures PD-7 in Chapter *2. Project Description*.)

TABLE AQ-4
SENSITIVE RECEPTORS

Map Ref. [Figure PD-7]	Receptor	Location	Distance from WSP Plan Area or Gen-Tie Corridor*	Receptors Within 1,000 feet*
	Westlands Solar Park			
1	20 ranch resid. (Shannon Ranch)	Avenal Cutoff Road/Lincoln Gale Ave.	65 – 600 feet	20
2	2 resid. (Stone Land Co. Ranch)	Nevada Av., 1.5 mi. E. of Avenal Cutoff	165 feet	2
3	4 ranch resid. (Westlake Farms)	SR-41, 1.3 mi. S. of Nevada Avenue	0.7 – 0.9 miles	0
4	2 ranch dwellings	Nevada Ave., just east of SR-41	0.5 – 0.6 miles	0
5	4 rural residences	22nd Ave., north of SR-41	0.9 – 1.0 miles	0
	WSP Gen-Tie Corridors			
	WSP-North to Gates Gen-Tie (11.5 miles)			
6	2 ranch dwellings	N. of Gale, 1.5 mi. E. of CA Aqueduct	0.4 – 0.5 miles	0
7	4 ranch dwellings	Gale Ave., 0.7 mi. E. of CA Aqueduct	0.3 – 0.4 miles	0
8	1 ranch dwelling	Tractor Ave., 1.0 mi. E. of SR-269	0.6 miles	0
9	3 ranch dwellings	Tractor Ave., 0.2 mi. E. of SR-269	0.9 miles	0
	WSP-South to Gates Gen-Tie (11.5 miles)			
2	2 resid. (Stone Land Co. Ranch)	Nevada Ave., 1.5 mi. E of Avenal Cutoff	180 feet	2
10	8 ranch dwellings	Nevada Ave., 1.3 mi. E of SR-269	125 feet	8

*0.19 miles = 1,000 feet.

WSP-North to Gates Gen-Tie. Along this 11.5-mile gen-tie corridor, there are 10 rural dwellings, of which none are within 1,000 feet of the corridor boundary.

WSP-South to Gates Gen-Tie. There are 10 rural residences long this 11.5-mile gen-tie corridor, all of which are located between 125 feet and 180 feet from the corridor boundary.

Buffers from Sources of Air Pollution

The SJVAPCD and CARB recommend that communities include buffers between sensitive receptors and sources of air toxic contaminant emissions and odors. In April 2005, CARB released the final version of the Air Quality and Land Use Handbook, which is intended to encourage local land use agencies to consider the risks from air pollution prior to making decisions that approve the siting of new sensitive receptors near sources of air pollution. CARB made recommendations regarding the siting of new sensitive land uses near freeways, truck distribution centers, dry cleaners, gasoline dispensing stations, and other air pollution sources. The WSP does not include any of the type of sources listed by CARB.

Greenhouse Gas Regulations and Guidance

State of California

Regulations addressing GHG emissions from land use development projects are primarily driven by the State. AB 32, the Global Warming Solutions Act of 2006, codifies the State of California's GHG emissions target by directing CARB to reduce the state's global warming emissions to 1990 levels by 2020. AB 32 was signed and passed into law by Governor Schwarzenegger on September 27, 2006. Since that time, CARB, the California Energy Commission (CEC), the California Public Utilities Commission (CPUC), and the California Building Standards Commission (CBSC) have all been developing regulations that will help meet the goals of AB 32.

A Scoping Plan for AB 32 was adopted by CARB in December 2008. It contains the State of California's main strategies to reduce GHGs from Business-As-Usual (BAU) emissions projected in 2020 back down to 1990 levels. BAU is the quantification of projected emissions in 2020, including increases in emissions caused by growth, without any GHG reduction measures. The Scoping Plan has a range of GHG reduction actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. It required CARB and other state agencies to develop and adopt regulations and other initiatives reducing GHGs by 2012.

As directed by AB 32, CARB has also approved a statewide GHG emissions limit. CARB established the amount of 427 MMT of CO_2e as the total statewide GHG 1990 emissions level and 2020 emissions limit. The limit is a cumulative statewide limit, not a sector- or facility-specific limit. The 2008 Scoping Plan estimated that 2020 Business as Usual (BAU) emissions would be 596 MMT of CO2e, indicating that a statewide reduction of 28 percent would be required to achieve 1990 emissions levels. In 2011 CARB revised the 2020 BAU annual emissions forecast downward to 507 MMT of CO_2e. Thus, an estimated reduction of 80 MMT of CO_2e (a 16% reduction from the revised 2020 BAU) was determined to be necessary to reduce statewide emissions to meet the AB 32 target by 2020. In April 2015, Governor Brown signed Executive Order EO-B-30-15 which sets a greenhouse gas emissions target at 40 percent of 1990 levels by 2030. On September 8, 2016, Governor Brown signed SB 32, which establishes by statute the GHG reduction target of 40 percent of 1990 levels by 2030. The CARB is currently updating the AB 32 Scoping Plan to reflect the 2030 target.

Beyond 2030, Executive Order S-3-05 sets a GHG emissions reduction target of 80 percent below 1990 levels by 2050. The incremental rate of emissions reductions mandated in SB 32, if sustained beyond 2030 on a State-wide basis, would achieve the 2050 target by 2040 (Draft Scoping Plan Update, Figure I-5, p. 26). The draft Scoping Plan Update states that "SB 32 builds on AB 32 and keeps us on the path toward achieving the State's 2050 objective of reducing emissions to 80 percent below 1990 levels" (CARB 2017, p. 3).

In September 2015, the California Legislature passed SB 350, which increases the states Renewables Portfolio Standard (RPS) for content of electrical generation from the 33 percent target for 2020 to a 50 percent renewables target by 2030.

San Joaquin Valley Air Pollution Control District

In August 2008, the San Joaquin Valley Air Pollution Control District adopted the Climate Change Action Plan (CCAP). The goals of the CCAP are to establish District processes for assessing the significance of project specific GHG impacts for projects permitted by the District; assist local land use agencies, developers, and the public by identifying and quantifying GHG emission reduction measures for development projects, and by providing tools to streamline evaluation of project specific GHG effects; ensure that collateral emissions from GHG emission reduction projects do not adversely impact public health or environmental justice communities in the Valley; and assist Valley businesses in complying with state law related to GHG emission reduction. In particular, the CCAP directed the District's Air Pollution Control Officer to develop guidance to assist District staff, valley businesses, land use agencies, and other permitting agencies in addressing GHG emissions as part of the CEQA process. Pursuant to this directive, on December 17, 2009, SJVAPCD adopted *Guidance for Valley Land-Use Agencies in Addressing GHG Emissions Impacts for New Projects under CEQA* (described below). The CCAP also directs District staff to investigate and develop a greenhouse gas banking program, enhance the existing emissions inventory process to include greenhouse gas emissions reporting consistent with new state requirements, and administer voluntary greenhouse gas emission reduction agreements.

SJVAPCD's Guidance for Addressing GHG Emissions Impacts under CEQA

Under its mandate to provide local agencies with assistance in complying with CEQA in climate change matters, SJVAPCD has developed *Guidance for Valley Land-Use Agencies in Addressing GHG Emissions Impacts for New Projects under CEQA, which was updated in March 2015.* As a general principal to be applied in determining whether a proposed project would be deemed to have a less-than-significant impact on global climate change, a project must be determined to have reduced or mitigated GHG emissions by 29 percent relative to Business-As-Usual conditions. The SJVAPC considers this emissions reduction target to be consistent with GHG emission reduction targets established in CARB's Scoping Plan for AB 32 implementation. The SJVAPCD guidance is intended to streamline the process of determining if project specific GHG emissions would have a significant effect. The proposed approach relies on the use of performance-based standards and their associated pre-quantified GHG emission reduction effectiveness (Best Performance Standards). Establishing Best Performance Standards (BPS) is intended to help project proponents, lead agencies, and the public by proactively identifying effective, feasible mitigation measures. Emission reductions achieved through implementation of BPS would be pre-quantified, thus reducing the need for project specific quantification of GHG emissions. For land use development projects, BPS would include emissions reduction credits for such project features as bicycle racks, pedestrian access to public transit, and so forth. Projects implementing a sufficient level of Best Performance Standards would be determined to have a less-than-significant individual and cumulative impact on global climate change and would not require project specific quantification of GHG emissions. For all projects for which the lead agency has determined that an Environmental Impact Report is required, quantification of GHG emissions would be required whether or not the project incorporates Best Performance Standards. SJVAPCD's guidance document does not constitute a rule or regulation, but is intended for use by other agencies in their assessment of the significance of project impacts to global climate change under CEQA.

Kings County

Kings County General Plan

The Westlands Solar Park and small portions of the transmission corridors are located within Kings County. The 2035 Kings County General Plan contains the following goals, objectives and policies related to air quality that are relevant to the Westlands Solar Park and transmission corridors:

Air Quality Element

C. Air Quality Management

AQ GOAL C1 Use Air Quality Assessment and Mitigation programs and resources of the SJVAPCD and other agencies to minimize air pollution, related public health effects, and potential climate change impacts within the County.

AQ OBJECTIVE C1.1 Accurately assess and mitigate potentially significant local and regional air quality and climate change impacts from proposed projects within the County.

AQ Policy C1.1.1: Assess and mitigate project air quality impacts using analysis methods and significance thresholds recommended by the SJVAPCD and require that projects do not exceed established SJVAPCD thresholds.

AQ Policy C1.1.2: Assess and mitigate project greenhouse gas/climate change impacts using analysis methods and significance thresholds as defined or recommended by the SJVAPCD, KCAG or California Air Resources Board (ARB) depending on the type of project involved.

AQ Policy C1.1.3: Ensure that air quality and climate change impacts identified during CEQA review are minimized and consistently and fairly mitigated at a minimum, to levels as required by CEQA.

AQ Policy C1.1.5: Assess and reduce the air quality and potential climate change impacts of new development projects that may be insignificant by themselves but, taken together, may be cumulatively significant for the County as a whole.

F. Hazardous Emissions and Public Health

AQ GOAL F1 Minimize exposure of the public to hazardous air pollutant emissions, particulates and noxious odors from freeways, major arterial roadways, industrial, manufacturing, and processing facilities.

AQ OBJECTIVE F2.1 Reduce emissions of PM10, PM2.5 and other particulates from sources with local control potential or under the jurisdiction of the County.

AQ Policy F2.1.2: Require all access roads, driveways, and parking areas serving new commercial and industrial development are constructed with materials that

minimize particulate emissions and are appropriate to the scale and intensity of use.

G. Climate Change

AQ GOAL G1 Reduce Kings County's proportionate contribution of greenhouse gas emissions and the potential impact that may result on climate change from internal governmental operations and land use activities within its authority.

AQ OBJECTIVE G1.1 Identify and achieve greenhouse gas emission reduction targets consistent with the County's proportionate fair share as may be allocated by ARB and KCAG.

AQ Policy G1.1.1: As recommended in ARB's Climate Change Adopted Scoping Plan (December 2008), the County establishes an initial goal of reducing greenhouse gas emissions from its internal governmental operations and land use activities within its authority to be consistent with ARB's adopted reduction targets for the year 2020. The County will also work with KCAG to ensure that it achieves its proportionate fair share reduction in greenhouse gas emissions as may be identified under the provisions of SB 375 (2008 Chapter 728) for any projects or activities requiring approval from KCAG.

Fresno County General Plan

Portions of the transmission corridors are located in Fresno County. The Fresno County General Plan contains the following goals and policies related to air quality that are relevant to the transmission corridors:

Open Space and Conservation Element

G. Air Quality

GOAL OS-G To improve air quality and minimize the adverse effects of air pollution in Fresno County.

Policy OS-G.13 The County shall include fugitive dust control measures as a requirement for subdivision maps, site plans, and grading permits. This will assist in implementing the SJVAPCD's particulate matter of less than ten (10) microns (PM10) regulation (Regulation VIII). Enforcement actions can be coordinated with the Air District's Compliance Division.

Policy OS-G.14 The County shall require all access roads, driveways, and parking areas serving new commercial and industrial development to be constructed with materials that minimize particulate emissions and are appropriate to the scale and intensity of use.

3.3.3. ENVIRONMENTAL IMPACT ANALYSIS

SIGNIFICANCE CRITERIA

Based on the State CEQA Guidelines, Appendix G, the project would be considered to have a significant impact on air quality and climate change if it would:

a. Conflict with or obstruct implementation of the applicable air quality plan. (Impact AQ-7.)

b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation. (Impacts AQ-1, AQ-2, and AQ-3.)

c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors). (Impacts AQ-1, AQ-2, and AQ-3.)

d. Expose sensitive receptors to substantial pollutant concentrations. (Impacts AQ-4 and AQ-5.)

e. Create objectionable odors affecting a substantial number of people. (Impact AQ-6.)

f. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant effect on the environment. (Impact AQ-8.)

g. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. (Impact AQ-9.)

The SJVAPCD has developed the Guide for Assessing and Mitigating Air Quality Impacts (SJVAPCD 2015), also known as the GAMAQI. The following thresholds of significance, as set forth in the SJVAPCD's GAMAQI, are applied to determine whether a proposed project would result in a significant air quality impact:

1) Construction Emissions of PM. Construction projects are required to comply with Regulation VIII as adopted by the SJVAPCD; however, the size of the project and the proximity to sensitive receptors may warrant additional measures.

2) Criteria Air Pollutant Emissions. SJVAPCD's current adopted thresholds of significance for criteria pollutant emissions and their application is presented in Table AQ-5. These thresholds address both construction and operational emissions. Note that the District treats permitted equipment and activities separately.

3) Ambient Air Quality. Emissions that are predicted to cause or contribute to a violation of an ambient air quality would be considered a significant impact. SJVAPCD recommends that dispersion modeling be conducted for construction or operation when on-site emissions exceed 100 pounds per day for any criteria pollutant after implementation of all mitigation measures.

4) Local CO Concentrations. Traffic emissions associated with the proposed project would be considered significant if the project contributes to CO concentrations at receptor locations in excess of the ambient air quality standards.

5) Toxic Air Contaminants or Hazardous Air Pollutants. Exposure to HAPs or TACs would be considered significant if the probability of contracting cancer for the Maximally Exposed Individual would exceed 20 in 1 million or would result in a Hazard Index greater than 1 for non-cancer health effects.

6) Odors. Odor impacts associated with the proposed project would be considered significant if the project has the potential to frequently expose members of the public to objectionable odors through development of a new odor source or placement of receptors near an existing odor source.

7) GHGs. In SJVAPCD's *Guidance for Valley Land-Use Agencies in Addressing GHG Emissions Impacts for New Projects under CEQA*, the District recommends that land use development projects demonstrate a 29 percent reduction in GHG emissions from Business-As-Usual (BAU).

TABLE AQ-5

SJVAPCD AIR QUALITY THRESHOLDS OF SIGNIFICANCE

CRITERIA POLLUTANT EMISSION LEVELS IN TONS PER YEAR (TPY)

Pollutant/Precursor	Construction Emissions	Operational Emissions	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
Carbon Monoxide (CO)	100	100	100
Nitrogen Oxides (NOx)	10	10	10
Reactive Organic Gases	10	10	10
Sulfur Dioxide (SOx)	27	27	27
Particulate Matter – PM_{10}	15	15	15
Particulate Matter – $PM_{2.5}$	15	15	15

With respect to cumulative air quality impacts, the GAMAQI provides that any proposed project that would individually have a significant air quality impact (i.e., exceed significance thresholds for criteria pollutants ROG, NO_x, or PM_{10}) would also be considered to have a significant cumulative impact (SJVAPCD 2015, p. 66). In cases where project emissions are all below the applicable significance thresholds, a project may still contribute to a significant cumulative impact if there are other projects nearby whose emissions would combine with project emissions to result in an exceedance of one or more significance thresholds for criteria pollutants (SJVAPCD 2015, p.108).

IMPACTS AND MITIGATION

Impact AQ-1. Construction Dust

***Westlands Solar Park*. Construction and decommissioning of the WSP solar projects would result in potentially high fugitive particulate matter emissions that would exceed Air District thresholds. (*Less-than-Significant Impact with Mitigation*)**

***WSP Gen-Tie Corridors*. Construction of the WSP gen-tie projects would result in emissions of fugitive particulate matter but the emissions levels would not exceed Air District thresholds. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criteria 'b' and 'c' above.

Westlands Solar Park

Construction activities would temporarily affect local air quality, causing a temporary increase in particulate dust and other pollutants. Dust emission during periods of construction would increase particulate concentrations at neighboring properties. This impact is potentially significant, but it can be mitigated through compliance with existing SJVAPCD requirements, discussed below.

The Westlands Solar Park consists of a series of solar photovoltaic generating facilities covering approximately 21,000 acres with a generating capacity of approximately 2000 MWs. The WSP is planned to be developed as twelve (12) separate solar generating facilities (SGFs) with SGF 1 planned to begin construction in 2018 and SGF 12 anticipated to begin construction in late 2029.

Grading and site disturbance (e.g., vehicle travel on exposed areas) would likely result in the greatest emissions of dust and PM_{10}/$PM_{2.5}$. Windy conditions during construction could cause substantial emissions of PM_{10}/$PM_{2.5}$. The estimated dust emissions from construction of the WSP solar projects are shown in Table AQ-6, on the next page. The table shows emissions of fugitive dust under "uncontrolled" and "controlled" conditions.

The SJVAPCD's GAMAQI emphasizes implementation of effective and comprehensive control measures rather than requiring a detailed quantification of construction emissions. SJVAPCD has adopted a set of PM_{10} fugitive dust rules collectively called Regulation VIII. This regulation essentially prohibits the emissions of visible dust (limited to 20-percent opacity) and requires that disturbed areas or soils be stabilized. Compliance with Regulation VIII during the construction phases of the WSP solar projects would be required.

TABLE AQ-6

WSP SOLAR AND GEN-TIE PROJECTS – CONSTRUCTION FUGITIVE DUST EMISSIONS

Project	On-and Off-Site Fugitive Dust Emissions, Tons per Year			
	PM_{10} Fugitives		$PM_{2.5}$ Fugitives	
	Uncontrolled	Controlled	Uncontrolled	Controlled
Solar Generating Facility (SGF) 1	13.25	3.8	2.33	0.7
SGF 2	**21.13**	4.8	4.06	0.9
South Gen Tie	11.14	2.4	1.51	0.3
Gates Substation Upgrades	0.55	0.1	0.09	0.0
Overlap: SGF 2 + South Gen Tie and Gates Substation Upgrades[3]	***33.07***	*7.2*	*7.68*	*1.7*
SGF 3	13.41	2.9	2.61	1.2
Overlap SGF 2+3[3]	***31.00***	6.7	*2.48*	0.5
SGF 4	**29.98**	7.6	5.53	1.3
SGF 5	**23.27**	6.7	4.08	1.4
SGF 6	**22.24**	5.7	4.10	1.1
SGF 7	**15.43**	3.9	2.84	1.0
SGF 8	**38.02**	8.5	7.33	0.7
SGF 9	**34.52**	8.7	6.40	1.6
SGF 10	**22.49**	5.8	4.18	1.5
SGF 11	**27.16**	7.3	5.07	1.0
SGF 12	**17.15**	4.5	3.07	1.3
N. WSP 230 kV Switchyard	1.10	0.3	1.86	0.8
S. WSP 230 kV Switchyard	1.10	0.3	0.12	0.1
North Gen Tie	11.14	2.4	1.51	0.1
SJVAPCD Significance Thresholds (TPY)	*15*	*15*	*15*	15
Exceeds Threshold	**Yes**	No	Yes	No

Source: Illingworth & Rodkin

Since the SJVAPCD requires implementation of comprehensive dust control measures at each project site, the estimates of uncontrolled emissions are provided as information for purposes of identifying impacts in the absence of the required dust controls. As shown in Table AQ-6, uncontrolled dust emissions from the SGF projects would exceed the Air District's threshold of 15 tons per year. Therefore, the impact of uncontrolled fugitive dust emissions during construction would be a *potentially significant*. Implementation of MM AQ-1 below would reduce the impact to *less than significant*.

WSP Gen-Tie Corridors

During construction of the gen-tie projects and related switchyards, fugitive dust would be generated by grading and excavation for transmission towers, access driveways, and staging areas. The total area of disturbance for the gen-tie projects would be approximately 149 acres. The two potential switching station sites within the WSP plan area would have disturbance areas of up to 10 acres each.

The estimated dust emissions from construction of the transmission projects and related facilities are shown in Table AQ-6. For purposes of analysis, it was assumed that the gen-tie projects would be constructed in different years with each gen-tie project requiring less than one year to complete. As shown in Table AQ-6, the annual uncontrolled construction dust emissions (PM_{10} fugitive) are estimated

to be 11.14 tons each for the south and north gen-ties, which is below the SJVAPCD PM_{10} threshold of 15 tons per year. The related switchyard/substation construction would also result in PM_{10} emissions well below the 15 tons per year threshold. Therefore, the fugitive dust emissions from the gen-tie projects would be *less than significant*.

Although the dust emissions from the gen-tie projects would be less than significant, the gen-tie projects would be required to employ dust controls, as specified in SJVAPCD Regulation VIII (described under MM AQ-1, below).

Mitigation Measures:

***Westlands Solar Park*. Implement the dust control requirements of SJVAPCD Regulation VIII, as set forth in MM AQ-1 below.**

***WSP Gen-Tie Corridors*. No mitigation is required under CEQA. (However, the SJVAPCD will require the implementation of the dust control requirements of SJVAPCD Regulation VIII.)**

MM AQ-1: The following dust control measures of SJVAPCD Regulation VIII and its constituent rules shall be implemented during construction and decommissioning of all WSP solar facilities to reduce construction PM_{10} and $PM_{2.5}$ emissions to less than 15 tons per year for each project:

- **Effective dust suppression (e.g., watering) for land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill and demolition activities.**
- **Effective stabilization of all disturbed areas of a construction site, including storage piles, not used for seven or more days.**
- **Control of fugitive dust from on-site unpaved roads and off-site unpaved access roads.**
- **Removal of accumulations of mud or dirt at the end of the workday or once every 24 hours from public paved roads, shoulders and access ways adjacent to the site.**
- **Cease outdoor construction activities that disturb soils during periods with high winds.**
- **Record keeping for each day dust control measures are implemented.**
- **Limit traffic speeds on unpaved roads to 15 mph.**
- **Install sandbags or other erosion control measures to prevent silt runoff to public roadways.**
- **Landscape or replant vegetation in disturbed areas as quickly as possible.**
- **Prevent the tracking of mud or dirt on public roadways by limiting access to the construction sites. If necessary, use wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site.**
- **Suspend grading activity when winds (instantaneous gusts) exceed 25 mph or dust clouds cannot be prevented from extending beyond the site.**

Based on the provisions of Regulation VIII, the following dust control options were incorporated into the emission estimates for fugitive dust (for controlled emissions) as shown in Table AQ-6:

- Earthwork/Equipment movement on site is controlled by 84% based on the application of watering 3 times per day
- Limiting speeds to less than 15 mph
- Unpaved road use utilized 80% control via watering 2 times per day
- Unpaved road speeds are limited to 15 mph
- Trackout of dirt is controlled by 84% by utilizing graveled entrances, metal cleaning grates, periodic water washing of the pavement and pavement sweeping between washings

As shown in Table AQ-6, the fugitive dust emissions with Regulation VIII dust control measures applied are below the significance threshold of 15 tons per year for all SGFs, gen-ties, and other project elements, as well as combinations of SGFs and related project elements.

Prior to construction of each solar and gen-tie project, the applicant would be required to submit a Dust Control Plan that meets the requirements of Regulation VIII. These plans are reviewed by SJVAPCD and construction cannot begin until Air District approval is obtained. Anyone who prepares or implements a Dust Control Plan must attend a training course conducted by the Air District. Construction sites are subject to SJVAPCD inspections under this regulation.

Impact AQ-2. Construction Exhaust Emissions

***Westlands Solar Park*. Exhaust emissions from equipment and vehicles used in construction of WSP solar projects would exceed the applicable threshold for ozone precursor NOx on a temporary basis, but would not exceed the applicable thresholds for other criteria pollutants. (*Less-than-Significant Impact with Mitigation*)**

***WSP Gen-Tie Corridors*. Exhaust emissions from equipment and vehicles used in construction of the WSP gen-tie projects would not exceed the applicable threshold for ozone precursor NOx or other criteria pollutants. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criteria 'b' and 'c' above.

Westlands Solar Park

Construction equipment exhaust affects air quality both locally and regionally. Emissions of air pollutants that could affect regional air quality were addressed by estimating emissions and comparing them to the SJVAPCD significance thresholds. Emissions of diesel particulate matter (DPM), a Toxic Air Contaminant (TAC), can also affect local air quality. This impact is discussed under Impact AQ-5.

Unmitigated construction exhaust emissions from all WSP solar and transmission projects (on and off-site) are shown in Table AQ-7. (Note: Table AQ-7 also shows PM_{10} and $PM_{2.5}$ fugitive emissions (as controlled with required dust control measures under Air District Regulation VIII) in order to allow aggregation with PM_{10} and $PM_{2.5}$ exhaust emissions and thus provide total values for PM_{10} and $PM_{2.5}$ which would be subject to Air District mitigation requirements.) SJVAPCD regulations that would

TABLE AQ-7

WSP SOLAR AND GEN-TIE PROJECTS – CONSTRUCTION EMISSIONS SUMMARY

Project	On-and Off-Site Construction Emissions, Tons per Year[1]										
	NO_x[1]	CO	ROG	SO_x	PM_{10}[2] Exhaust	PM_{10} Fugitives (Controlled)	PM_{10} Total	$PM_{2.5}$ Exhaust	$PM_{2.5}$ Fugitives (Controlled)	$PM_{2.5}$ Total	CO_2e Annual Total [2]
Solar Generating Facility (SGF) 1	**11.97**	7.85	1.27	0.04	0.37	3.79	4.16	0.37	0.65	1.02	4212
SGF 2	**14.05**	8.74	1.77	0.07	0.54	4.77	5.31	0.54	0.88	1.42	4172
South Gen Tie	9.86	5.32	1.18	0.02	0.42	2.36	2.78	0.42	0.32	0.74	1826
Gates Substation Upgrades	1.27	0.96	0.21	0.01	0.03	0.15	0.15	0.03	0.02	0.05	371
Overlap: SGF 2 + South Gen Tie and Gates Substation Upgrades[3]	***25.43***	*14.99*	*3.16*	*0.07*	*1.03*	*7.19*	*8.22*	*1.03*	*1.67*	*2.23*	*NA*
SGF 3	**12.23**	6.57	1.64	0.03	0.51	2.90	3.41	0.51	***1.20***	1.05	2611
Overlap SGF 2+3[3]	***23.53***	*13.60*	*3.06*	*0.06*	*0.95*	*6.74*	*7.69*	*0.95*	**0.54**	*2.20*	*NA*
SGF 4	9.72	10.11	1.09	0.07	0.21	7.63	7.85	0.21	***1.25***	1.56	6280
SGF 5	**11.02**	9.20	1.08	0.07	0.26	6.72	6.98	0.26	**1.35**	1.40	6219
SGF 6	**10.65**	8.88	1.28	0.05	0.32	5.68	6.00	0.32	**1.14**	1.32	5081
SGF 7	**12.29**	11.19	2.07	0.05	0.53	3.94	4.47	0.53	**1.00**	1.22	5096
SGF 8	4.37	7.00	0.78	0.05	0.14	8.52	8.67	0.14	**0.69**	1.72	4684
SGF 9	5.60	8.97	1.00	0.07	0.19	8.65	8.83	0.19	**1.57**	1.73	6168
SGF 10	4.38	7.10	0.78	0.05	0.13	5.76	5.89	0.13	**1.54**	1.16	5007
SGF 11	9.47	13.79	1.84	0.08	0.34	7.25	7.59	0.34	**1.02**	1.63	7568
SGF 12	3.44	5.31	0.65	0.04	0.11	4.51	4.62	0.11	**1.29**	0.89	3316
N. WSP 230 kV Switchyard	0.93	0.68	0.13	0.01	0.02	0.29	0.31	0.02	**0.78**	0.08	303
S. WSP 230 kV Switchyard	0.72	0.66	0.10	0.01	0.02	0.29	0.31	0.02	**0.05**	0.08	303
North Gen Tie	4.42	4.52	0.70	0.02	0.15	2.36	2.51	0.15	**0.05**	0.51	1786
SGF/Substation Water Use											518
Gen-Tie Line Water Use											20
SJVAPCD Significance Thresholds (TPY)	10	100	10	27			15	15	15	15	NA
Exceeds Threshold	Yes	No	No	No			No	No	No	No	NA
Projects that Exceed Thresholds	SGF 1, 2, 3, 5, 6, & 7	-	-	-				-			-

Notes:
[1] No reduction for ISR assumed.
[2] Metric tons.
Source: Illingworth & Rodkin

apply to construction activities include Rule 4102, regarding creation of a nuisance, Rule 4601 which limits volatile organic compound emissions from architectural coatings, storage and cleanup, and Rule 4641 which limits emissions form asphalt paving materials, and Rule 9510 that applies to indirect sources.

As shown in Table AQ-7, the CEQA significance thresholds for NOx would be exceeded by the annual construction emissions for SGF 1, SGF 2, SGF 3, SGF 5, SGF 6 and SGF 7. (Note: It is anticipated that construction of SGF 2, the South Gen-Tie, and the Gates Substation upgrades may overlap during 2019. It is also possible that construction of SGFs 2 and 3 may overlap in 2020. Thus additional calculations to reflect these scenarios were included in Table AQ-6B for the assumed years when the construction of these project elements would overlap, which is intended to represent the worst-case construction intensity period during the WSP buildout period. As expected, the CEQA thresholds for NOx for these possible overlapping projects were also exceeded. Since the construction of six of the first seven SGFs would exceed the CEQA significance thresholds for NOx, as shown in Table AQ-7, the impact would be significant. Construction period emissions of ROG, CO, SO_2, and PM_{10}/$PM_{2.5}$ for all SGFs would be below the thresholds used by SJVAPCD to judge the significance of construction air quality impacts. The fugitive dust components of PM_{10}/$PM_{2.5}$ emissions would be mitigated to less-than-significant levels through implementation dust control measures required under SJVAPCD Regulation VIII, as specified in MM AQ-1 above. In summary, the construction emissions levels for several SGFs would exceed significance thresholds for NOx, which would represent a *potentially significant impact*. Implementation of MM AQ-2 below would reduce the impact to *less than significant*.

At the end of the productive lives of the WSP solar facilities, after 25 to 30 years of operation, it is assumed that each SGF would be decommissioned. The activities associated with deconstruction would be comparable to construction, but emissions are expected to be substantially lower given anticipated reductions in vehicle and equipment emissions to be phased-in over time per State and federal regulations, and also because of the generally lower intensity of equipment use associated with decommissioning. At the time of decommissioning, emission levels for NOx and ROG are expected to be about 25 percent of construction emissions, and PM_{10} and $PM_{2.5}$ (as exhaust) would be about 45 percent and 23 percent of construction emissions, respectively (Kings County 2012). Thus, for even the largest 250 MW solar facilities, emissions during decommissioning are not expected to exceed SJVAPCD significance thresholds for any criteria pollutants. With the application of Regulation VIII dust control requirements, fugitive PM_{10} emissions are likewise expected to be below the applicable significance thresholds for the even the largest SGFs, as they are for construction. Therefore, the emissions associated with SGF decommissioning would be *less than significant*.

WSP Gen-Tie Corridors

Emissions during construction of the gen-tie projects, switchyards, and Gates substation upgrades would be generated by construction equipment and delivery trucks carrying materials to and from the construction sites and staging areas. As shown in Table AQ-7, the emissions from construction of each gen-tie project, switchyard, and substation upgrade would not exceed the SJVAPCD's significance thresholds for NOx, CO, ROG, SOx, or PM_{10}/$PM_{2.5}$ which would all be well below the SJVAPCD's significance thresholds for these criteria pollutants. Actual construction phasing and scheduling of the each gen-tie project may vary from the sequence assumed in this analysis; however, the worst-case scenario is represented in Table AQ-7 by the overlapping construction of SGF 2, the South Gen-Tie, and the Gates Substation upgrades to accommodate the gen-tie. Under this scenario, the combined NOx emissions in a given year would exceed the SJVAPCD's applicable significance criterion of 15 tons. However, as discussed

above, the construction of an individual gen-tie project, in the absence of a related SGF project, would not exceed the applicable NOx threshold. (If a gen-tie project is planned in conjunction with an SGF project, the combined emissions would be calculated to determine the level of project-specific impact, and if significant, to determine the level of mitigation applicable to the combined project.) The impacts associated with construction exhaust emissions from the construction of single gen-tie alone would be *less than significant.*

Mitigation Measures:

***Westlands Solar Park*. MM AQ-2 shall be implemented during construction of SGFs 1, 2, 3, 5, 6 and 7 to reduce construction NOx emissions to less than 10 tons per year for each project:**

***WSP Gen-Tie Corridors*. No mitigation is required.**

MM AQ-2: NO_x Reduction Measures during Construction. The following measures shall be implemented during construction of SGFs 1, 2, 3, 5, 6, and 7 to reduce construction NO_x emissions to less than 10 tons per year for each project:

a. Utilize Low-Emission Construction Equipment. Develop a plan to use construction equipment with low NO_x emissions. This may include the use of equipment that meets US EPA Tier 3 standards (and equipment that meets Tier 4 standards, if available).

b. Minimize Idling Time. Set idling time limit of 5 minutes or less for construction equipment.

c. Worker Trip Reduction. Evaluate the feasibility of a work shuttle or carpool program to reduce emissions from worker travel.

d. Delivery Truck Trip Reduction. Evaluate the feasibility of methods to reduce truck travel for delivery of equipment, by reducing the number of necessary truck trips.

e. Execute Voluntary Emissions Reduction Agreements. Any solar projects for which the project-specific air quality analysis shows that the above mitigations will not be sufficient to reduce a project's construction emissions of NOx below 10 tons per year, the project proponent shall execute a Voluntary Emissions Reduction Agreement (VERA) with SJVAPCD which provides for further reduction of construction NO_x to reduce the project's NOx emissions to less than 10 tons per year.

Use of Tier 3 equipment for the significant phases of the SGF construction would reduce the on-site project emissions of NO_x by about 30 percent. However, off-site vehicle travel also contributes to NOx emissions. Application of Tier 4 equipment would reduce the on-site emissions still further, but were not quantified, since this equipment may not be available for the construction projects, especially the first few SGFs. (The availability of new Tier 4 equipment is expected to increase over the next five years as it replaces the older tiered fleets, but is assumed to be minimally available during the development of the first four SGFs.) Additionally, reductions can be achieved through the use of newer or retrofitted

construction fleets, a reduction of construction traffic, use of electrical powered stationary equipment, and idling restrictions for equipment and trucks.

The precise reductions in emissions that would be achieved by on-site measures cannot be quantified at this programmatic level of analysis, particularly given the long time horizon of WSP development, and the unknown pace at which cleaner vehicles and equipment will be integrated into construction fleets. However, it is likely that the combined use of Tier 3 and 4 equipment would reduce NO_x emissions for SGFs 1, 3, 5, 6 and 7 to less-than-significant levels, but the NO_x emissions for SGF 2 (and both of the overlap construction combinations listed in Table AQ-7) would likely remain above the 10-ton per year significance threshold, without the implementation of off-site measures through Voluntary Emissions Reductions Agreements (VERAs). (See the next paragraph for a description of VERAs.) For purposes of this analysis, it is expected that the affected SGF applicants within the WSP plan area would be required by Kings County to execute VERAs with the Air District, as needed following project-specific analysis, to reduce NO_x emissions to less-than-significant levels.

In cases where it is not feasible to fully mitigate project emissions through onsite measures, the project proponent and SJVAPCD may enter into a contractual agreement, i.e., Voluntary Emissions Reduction Agreement (VERA), in which the project proponent agrees to mitigate project-specific emissions by providing funds to the SJVAPCD. (The funds payable would be determined through application of the ISR fee schedule for each ton of pollutant subject to off-site mitigation.) The SJVAPCD's role is to administer the implementation of the VERA consisting of identifying emissions reductions projects, funding those projects and verifying that emissions reductions have been successfully achieved. The types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (such as agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner more efficient heavy duty trucks, and replacement of old farm tractors. The SJVAPCD has been successfully developing and implementing VERA contracts with project proponents since 2005. It is the SJVAPCD's experience that implementation of a VERA is a feasible mitigation measure, which effectively achieves the emission reductions by supplying real and contemporaneous emissions reductions measures (SJVAPCD 2015, p. 116-117). (It is noted that while ISR fees are not considered mitigation for CEQA purposes, the payment of fees under a VERA would also be credited toward the ISR fees payable by the project, so there would be no duplication of off-site mitigation.) Therefore, the implementation of feasible onsite emission reduction measures identified above, along with execution of VERAs to provide any additional off-site mitigation needed to reduce emissions to below threshold levels, would be considered by the SJVAPCD to reduce the construction NO_x emissions to acceptable levels. (It is assumed that this would include the necessary reductions for the overlapping construction years when combined emissions would be higher, if any construction periods for SGFs and/or other project elements do in fact overlap.)

The implementation of a combination of on-site and off-site mitigation measures (the latter in the form of VERAs), as required under MM AQ-2, would ensure that emissions of criteria pollutants for each SGF and related project is reduced to below the applicable thresholds of significance for each pollutant. The SJVAPCD CEQA guidance states that "…project specific emissions below the District's offset thresholds will have a less than significant impact on air quality (SJVAPCD 2015, p. 82.) Therefore, with the implementation of the above mitigation measures, the air quality impacts of construction emissions by the WSP solar, gen-tie, and substation projects would be *less than significant*.

Impact AQ-3. Operational Emissions

***Westlands Solar Park*. The emissions from the low-intensity operation and maintenance activities associated with the WSP solar facilities would not exceed applicable thresholds. (*Less-than-Significant Impact*)**

***WSP Gen-Tie Corridors*. The emissions from the low-intensity inspection and maintenance activities associated with WSP gen-tie lines and switchyards would not exceed applicable thresholds. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criteria 'b' and 'c' above.

Westlands Solar Park

Construction is expected to begin in 2018 for SGF 1 and end in 2030 for SGF 12. The first fully operational year after completion of all SGFs is expected to be 2030.

The effect of the full operations of the WSP solar projects on regional air quality was evaluated by predicting associated emissions for 2030, after all projects are completed and operational. The maintenance driveways within all SGFs will be graveled with aggregate base, which would reduce fugitive dust associated with maintenance vehicle trips. In addition, all SGF sites will be revegetated with low growing plants to provide stability to the soil surface and reduce wind erosion. The annual emissions associated with the operation of the completed projects are shown in Table AQ-8.

TABLE AQ-8
UNMITIGATED WSP SOLAR OPERATIONS EMISSIONS SUMMARY

	Operational Emissions - Tons per Year (TPY)								
	NO_x	**CO**	**ROG**	**SO_x**	**PM_{10} Exhaust**	**PM_{10} Fugitives**	**$PM_{2.5}$ Exhaust**	**$PM_{2.5}$ Fugitives**	**CO_2e**
All Site Operations Areas*	0.8	4.0	0.26	0.01	0.028	5.974	0.026	0.605	1069
SJVAPCD Significance Thresholds (TPY)	*10*	*100*	*10*	*27*	*15*	*15*	*15*	*15*	*NA*
Exceeds Threshold	No	No	No	No	No	No	No	No	No

* Operations emissions include both on- and off-site emissions.

Emissions sources include: Worker commutes, site deliveries, onsite vehicle use, onsite portable engine use, offsite paved road fugitives, onsite unpaved road fugitives, GHG emissions from water use. Does not include reductions required under ISR.

Source: Illingworth & Rodkin

Based on the implementation of the requirements of SJVAPCD Rule 9510, the SGF operational emissions, generated primarily by mobile sources, would increase emissions, but they would be well

below all GAMAQI significance thresholds. Therefore, the impact of these increases would be less-than-significant.

Photovoltaic energy projects do not typically include stationary combustion equipment, so no air emissions are anticipated from these sources. If stationary sources are included at a later date, they may require permits from SJVAPCD. Such sources could include combustion emissions from standby emergency generators (rated 50 horsepower or greater). These sources would normally result in minor emissions, compared to those from operations sources shown in Table AQ-8. Sources of stationary air pollutant emissions complying with all applicable SJVAPCD regulations generally will not be considered to have a significant air quality impact. Stationary sources that are exempt from SJVAPCD permit requirements due to low emission thresholds would not be considered to have a significant air quality impact.

As noted, the operational emissions of regional pollutants would not exceed the Air District's CEQA significance thresholds for any pollutant, as shown in Table AQ-8. Therefore, the air quality impacts due to operational emissions by the WSP solar, transmission, and switching station projects would be *less than significant*.

WSP Gen-Tie Corridors

Operational activity associated with the gen-tie lines and related facilities would consist of routine inspections and maintenance, and occasional repairs. These activities would be performed by small crews traveling to and from the tower sites in utility trucks on a periodic basis. This very low intensity of activity related to gen-tie operations would result in negligible emissions of dust or exhaust pollutants. Therefore, the impacts from the operation of the gen-tie lines and related facilities upon air quality would be *less than significant*.

Mitigation Measures for Impact AQ-3:

***Westlands Solar Park*. No mitigation is required.**

***WSP Gen-Tie Corridors*. No mitigation is required.**

Impact AQ-4. Carbon Monoxide Concentrations from Operational Traffic

***Westlands Solar Park*. Mobile emissions generated by WSP operational traffic would increase slightly at intersections in the vicinity; however, resulting CO concentrations would be below ambient air quality standards. (*Less-than-Significant Impact*)**

***WSP Gen-Tie Corridors*. Mobile emissions generated by gen-tie operational traffic would result in a negligible increase in carbon monoxide concentrations at intersections in the vicinity, which would remain well within ambient air quality standards. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criterion 'd' above.

Westlands Solar Park

Operational traffic generated by WSP solar projects would increase concentrations of carbon monoxide along roadways providing access to the SGFs. Carbon monoxide is a localized air pollutant, where highest concentrations are found very near sources. The major source of carbon monoxide is automobile traffic. Elevated concentrations, therefore, are usually only found near areas of high traffic volume and congestion.

Emissions and ambient concentrations of CO have decreased greatly in recent years. These improvements are due largely to the introduction of cleaner burning motor vehicles and reformulated motor vehicle fuels. No exceedances of the State or federal CO standards have been recorded at any of San Joaquin Valley's monitoring stations in the past 15 years. The San Joaquin Valley Air Basin has attained the State and National CO standards.

Despite this progress, localized CO concentrations are still a concern in the San Joaquin Valley and are addressed through the SJVAPCD screening method that can be used to determine with fair certainty whether a project's CO emissions at any given intersection would not cause a potential CO hotspot. A project can be said to have a potential to create a CO violation or create a localized hotspot if either of the following conditions are met: 1) level of service (LOS) on one or more streets or intersections would be reduced to LOS E or F, or; 2) the project would substantially worsen an already LOS F street or intersection within the project vicinity. All roadways in the vicinity that would be affected by WSP operational traffic currently operate at LOS C or better, and are anticipated to continue doing so after full WSP buildout. Since neither of the above threshold conditions would be met, the potential impact on CO would be considered less than significant.

WSP Gen-Tie Corridors

As mentioned, the routine inspections and maintenance of the gen-tie lines and related facilities would be performed by small crews traveling to and from towers sites on a regular basis. Given the dispersed locations of the tower sites and the very low frequency and volume of operational traffic, there is no potential for these operational activities to result in localized CO concentrations that would exceed significance thresholds. Therefore, the impact of transmission operations in terms of contributing to excessive local CO concentrations would be *less than significant.*

Mitigation Measures:

***Westlands Solar Park*. No mitigation is required.**

***WSP Gen-Tie Corridors*. No mitigation is required.**

Impact AQ-5. Exposure of Sensitive Receptors to Toxic Air Contaminants

***Westlands Solar Park*. Diesel exhaust emissions from construction and operational vehicles and equipment would expose nearby receptors to toxic air contaminants; however, given the relatively minor use of heavy equipment for solar project construction, the very small number of nearby sensitive receptors, the relatively short period of construction emissions that would occur in the vicinity of the sensitive receptors, and the very low intensity of solar operations, the overall health risks from toxic air contaminants would not be significant. (*Less-than-Significant Impact*)**

***WSP Gen-Tie Corridors*. Diesel exhaust emissions from construction vehicles and equipment would expose nearby receptors to toxic air contaminants; however, given the dispersed nature of gen-tie line construction, the very small number of nearby sensitive receptors, the very short period of construction emissions that would occur in the vicinity of the nearest sensitive receptors, and the negligible level of operational emissions, the overall health risks from toxic air contaminants would not be significant. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criterion 'd' above.

Westlands Solar Park

Diesel particulate matter (DPM) would be emitted from diesel-fueled vehicles and equipment during construction activities and from vehicle traffic generated by the WSP solar projects while operational. The particulate matter component of diesel exhaust has been classified as a Toxic Air Contaminant (TAC) by CARB based on its potential to cause cancer and other adverse health effects.

The highest daily levels of DPM would be emitted during construction activities from use of heavy-duty diesel equipment such as bulldozers, excavators, loaders, graders and diesel-fueled haul trucks. However, these emissions would be intermittent, vary throughout the WSP plan area, and be of a relatively short duration (about 1-2 years of construction activity for each SGF). In contrast, low-level DPM emissions would result from project operation but they would be constant over the lifetime of the project. Operational DPM emissions could result from the potential use of pickup trucks with a portable water trailer (and pump) which would be used for cleaning solar panels. The panel cleaning is expected to occur up to four (4) times per year.

DPM emissions from construction activities, in the form of PM_{10} exhaust, were estimated using the methods discussed above which are based on an estimated schedule for construction activities (grading, and construction) and types of equipment expected to be used. These emissions are shown in Table AQ-6. The total PM_{10} exhaust construction emissions for any given SGF are very low, with the largest SGFs (250 MW) emitting 0.37 tons per year. This emission rate is very low compared to the SJVAPCD significance threshold of 15 tons per year. Emissions from other vehicles during operations (e.g., employee vehicles and onsite maintenance vehicles) were estimated using emission factors for diesel-fueled vehicles. Those emissions are shown in Table AQ-8. At full WSP buildout, the operations-related PM_{10} exhaust emissions would total 0.028 tons per year for the entire WSP plan area, which is very low compared to the 15 ton per year significance threshold.

Cancer risk, which is the primary adverse effect from exposure to DPM, is based on lifetime exposures. Construction activities would be temporary; however, they could be locally elevated during intense

construction activities. (However, given the minimal grading required for solar facilities, the use of heavy earth moving equipment would be relatively low compared to conventional land development projects.) In general, sensitive receptors are not in close proximity to the SGF construction sites. In addition, the construction sites are quite large, so construction activities at any one area would be relatively brief. There are some rural residences near SGF 10, 11 and 12 (i.e., 20 dwellings at Shannon Ranch and 2 dwellings at Stone Land Company Ranch). For construction near these residences, a potential for cancer risk, while unlikely to be significant, would exist. DPM concentrations dissipate rapidly with distance from the source, decreasing dramatically within 300 feet (Western 2015, p. 4-15), and dropping about 80 percent at approximately 1,000 feet from the source (I&R 2017). Thus emissions from construction activity within 1,000 feet of the receptor locations have the greatest potential to contribute to cancer risk. During construction of SGFs 10, 11, and 12, construction activity would occur within 1,000 feet of the Shannon Ranch complex for a total duration of approximately 3.2 months, compared to a total construction period of about 55 months for the entirety of all three SGFs. The total PM_{10} exhaust emissions from construction of all three of these nearby SGFs would be 1.23 tons, of which approximately 0.07 tons would be generated within 1,000 feet of the Shannon Ranch dwellings. It was noted that the solar PV facilities would require very little grading, so emissions from heavy earthmoving equipment would be relatively low, which is reflected in the low estimated PM_{10} exhaust emissions levels. Another factor that reduces potential cancer risk is that during prevailing wind conditions, the Shannon Ranch is located upwind or crosswind from these three nearest SGFs, so most DPMs are likely to be dispersed away from the ranch instead of toward it. Regarding the two dwellings at the Stone Land Company Ranch, during the 9-month construction period for the nearby SGF 12, construction activity would occur within 1,000 of these residences for about 0.4 months, during which time PM_{10} exhaust emissions would total approximately 0.01 tons.

In addition, these already low emissions of DPM would be further reduced by the application of on-site and off-site mitigation measures for criteria pollutants prescribed in MM AQ-2. Also, since it is anticipated that SGFs 10, 11, and 12 would be constructed toward the end of the WSP buildout period, technical advances in emissions controls for construction equipment are expected to further reduce PM_{10} emissions at the time of construction.

As noted, operational emissions would be very low given the low intensity nature of solar operations. Also, operational emissions would only occur over a 30-year operational life for each SGF, not an entire 70-year exposure period.

As a point of comparison, a recent Health Risk Assessment (HRA) conducted on the 400-MW Tranquillity solar project in Fresno County found the lifetime cancer risk for the maximally exposed receptor to be 2.45 in 1 million. The construction and operational characteristics of the Tranquillity solar project are virtually identical to those of the WSP solar development. The Tranquillity solar project has several sensitive receptors located directly adjacent and downwind of the project site, and therefore represents a worst-case scenario for health risk assessment of large PV solar projects in the San Joaquin Valley. Since atmospheric conditions at the Tranquillity site are also very similar to those of the WSP plan area, the results of the Tranquillity health risk assessment are directly transferable to WSP solar development. Based on this comparison, it is reasonable to conclude that the increased lifetime cancer risk for the nearest sensitive receptors at the Shannon Ranch and the Stone Ranch Land Company resulting from the WSP solar development and operation, would be well below the 20 in 1 million significance threshold.

In summary, given the relatively minor use of heavy equipment for solar project construction, the very small number of nearby sensitive receptors, the relatively short period of construction emissions that would occur in the vicinity of the sensitive receptors, and the very low intensity of solar operations, the health risks from toxic air contaminants to the nearest sensitive receptors would not be significant. Therefore, no long-term health risks are anticipated, and the potential impacts of WSP solar development in terms of health risk from toxic air contaminants would be *less than significant*.

WSP Gen-Tie Corridors

As is the case for WSP solar projects, diesel particulate matter (DPM) would be emitted from diesel-fueled vehicles and equipment during construction of the gen-tie projects and related facilities. Operational emissions would be negligible due to the very low intensity of inspection and maintenance activities associated with gen-tie lines and related facilities, as discussed above.

As described under "Sensitive Receptors" above, there are a total of 10 sensitive receptors (all residences) located within 1,000 feet of the southern gen-tie corridors. There are no residences within 1,000 feet of the northern gen-tie corridor. The nearest 10 residences, located along Nevada and Jayne Avenues, are situated 125 feet to 180 feet from the corridor boundary. It is anticipated that nearest transmission towers would be located approximately 300 feet from the nearest dwelling at the Stone Land Company Ranch and 400 feet from the nearest of the 8 dwellings on the south side of Jayne Avenue. Also few if any new access driveways would need to be constructed, given that all tower sites would be readily accessible from the adjacent county roads. It is expected that staging areas would be located well away from any existing residences. The planned locations of the two WSP switching stations are located at least 2 miles and 3 miles from the nearest residences, respectively.

Construction of the gen-tie towers would proceed quickly. The total time required at each tower site for clearing, grading, excavation of footings, and tower assembly and erection, and clean up, would be 1 to 2 weeks. The area subject to temporary grading at each tower site would be approximately one acre, so the duration of grading equipment operation would be brief. Similarly, the time required for auguring holes for the concrete footings at each tower site would also be short.

The maximally exposed sensitive receptor along Nevada and Jayne Avenues would be 300 feet or more away from the nearest tower site. However, even under worst-case conditions with the nearest tower placed in proximity to the maximally exposed receptor, the total duration of nearby construction could be up to two weeks, but likely much shorter, with total operating time for diesel equipment shorter still. Construction of other towers and access driveways in the vicinity would occur at least 800 feet away and farther. At this distance, most diesel particulates would be dispersed and concentrations reaching the receptor would be low. Operational emissions would be negligible given the very low frequency of inspection and maintenance activities that would take place at the nearest tower. The very low level of exhaust emissions associated with construction of the transmission projects and related facilities is indicated by the low levels of PM_{10}/$PM_{2.5}$ (as exhaust) shown in Table AQ-6. As shown, the total annual emission of exhaust particulate matter is calculated to be 0.42 tons for the Southern Gen-Tie, and 0.17 tons for the Northern Gen-Tie (for which emissions are lower due to its later construction year when equipment will have lower emissions), both of which are well below the significance threshold of 15 tons per year.

Given the very brief duration of construction that would occur at the nearest residential receptor, and considering the negligible operational emissions, and the lifetime exposure period considered in

evaluating cancer risk, it is expected that the increased cancer risk at the maximally exposed receptor would be very low and would be well below the risk threshold of 20 in 1 million. Therefore, the overall health risk due to emissions of diesel particulate matter from construction of the transmission projects and related facilities would be *less than significant*.

Mitigation Measures:

***Westlands Solar Park*. No mitigation is required.**

***WSP Gen-Tie Corridors*. No mitigation is required.**

Impact AQ-6. Odors

***Westlands Solar Park*. The WSP solar projects would temporarily generate odors during construction. (*Less-than-Significant Impact*)**

***WSP Gen-Tie Corridors*. The construction of the WSP gen-tie projects and related facilities would temporarily generate odors during construction. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criterion 'e' above.

Westlands Solar Park

During construction, the various diesel-powered vehicles and equipment in use onsite would create localized odors. These odors would be temporary and would dissipate relatively quickly and thus would not likely to be noticeable for extended periods of time much beyond the boundaries of the WSP solar projects. Most if not all diesel odors carried off-site would disperse into the atmosphere before reaching the nearest sensitive receptors. Therefore, potential for diesel odor impacts to occur as a result of WSP solar development is *less than significant*.

During project operations, the WSP solar facilities are not expected to generate any objectionable odors. Therefore, the odor impacts associated with SGF operations would be *less than significant*.

WSP Gen-Tie Corridors

As discussed for WSP solar development above, the odors generated by diesel exhaust during construction of the gen-tie projects and related facilities would largely dissipate before reaching the nearest receptors. The potential for odor generation during operations would be negligible. Therefore, the potential for odor impacts to occur as a result of the WSP gen-tie projects and related facilities would be *less than significant*.

Mitigation Measures:

***Westlands Solar Park*. No mitigation is required.**

***WSP Gen-Tie Corridors*. No mitigation is required.**

Impact AQ-7. Consistency with Clean Air Planning Efforts

***Westlands Solar Park*. The WSP solar development would not conflict with the current clean air plan or obstruct its implementation. (*Less-than-Significant Impact with Mitigation*)**

***WSP Gen-Tie Corridors*. The construction of the WSP gen-tie projects and related facilities would not conflict with the current clean air plan or obstruct its implementation. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criterion 'a' above.

Westlands Solar Park

The SJVACPD's CEQA guidance states that projects with emissions below the thresholds of significance for criteria pollutants would be determined to not conflict with or obstruct implementation of the District's air quality plan (SJVAPCD 2015, p. 65.) As discussed under Impact AQ-2, it is calculated that the emissions of criteria pollutants for the SGF projects would exceed some significance thresholds prior to mitigation, but that implementation of MM AQ-2 would result in reduction of emissions levels to below the applicable thresholds of significance. Therefore, the construction of the SGF projects, as mitigated by the measures specified in MM AQ-2, would not conflict with or obstruct implementation of efforts outlined in the region's air pollution control plans to attain or maintain ambient air quality standards. Since the WSP solar development, as mitigated, would therefore be consistent with clean air planning efforts, the impact would *less than significant with mitigation*.

WSP Gen-Tie Corridors

The SJVACPD's CEQA guidance states that projects with emissions below the thresholds of significance for criteria pollutants would be determined to not conflict with or obstruct implementation of the District's air quality plan (SJVAPCD 2015, p. 65.) As discussed under Impact AQ-2, it is calculated that the emissions of criteria pollutants for the gen-tie projects and related switchyards would be well below the applicable significance thresholds. As such, the air quality impacts associated with gen-tie line construction would be less than significant and would not conflict with or obstruct implementation of clean air plans, and the impact in this regard would be *less than significant*.

Mitigation Measures:

***Westlands Solar Park*. Implement MM AQ-2.**

***WSP Gen-Tie Corridors*. No mitigation is required.**

Impact AQ-8. Greenhouse Gas (GHG) Emissions

***Westlands Solar Park*. The WSP solar projects would generate greenhouse gas emissions, either directly or indirectly, during construction and operation. However, the GHG emissions resulting from WSP solar development would be very small compared to the substantial net benefit to global climate change resulting from the clean power generation provided. (*Less-than-Significant Impact*)**

***WSP Gen-Tie Corridors*. The WSP gen-tie projects would generate greenhouse gas emissions, either directly or indirectly, during construction and operation. However, the GHG emissions resulting from the gen-tie projects would be very small compared to the substantial net benefit to global climate change that would occur due to the delivery of renewable power that would be enabled by the gen-tie projects. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criterion 'f' above.

Introduction

The emission of greenhouse gases (GHG) from many sources over long periods of time has resulted in, and continues to contribute to, global warming and climate change. The effects of climate change include: melting polar ice caps, sea level rise, increased coastal flooding, increased frequency and severity of extreme weather events, habitat disruption, and other adverse environmental effects. It is generally accepted that individual development projects, in and of themselves, are too small to have a perceptible effect on global climate. However, the GHG emissions from each development project results in an incremental contribution to global warming and climate change. The geographic scope of climate change is global, and the cumulative emissions of GHGs globally have resulted in cumulatively significant climate change impacts. Thus, in CEQA terms, GHG emissions associated with individual development projects are by nature cumulative in their effects. As such, a significant impact would occur if the GHG emissions associated with a project represent a considerable contribution to the cumulatively significant impacts resulting from global climate change.

Westlands Solar Park and WSP Gen-Tie Corridors

The WSP solar and gen-tie projects would directly generate greenhouse gas emissions during construction, and routine operational and maintenance activities. The three GHGs associated with the project, i.e., CO_2, CH_4, and N_2O, would be emitted from on road vehicles and non-road equipment during construction and from vehicles used during routine operational activities. Estimated greenhouse gas emissions from construction and operational activities are shown in Tables AQ-6 and AQ-8 above. Another GHG gas that would be used at the solar projects is sulfur hexafluoride (SF_6) which would be used as a gas insulator in switchgear at on-site substations during project operations. Older switchgear, manufactured before 1999, is prone to leaking SF_6 into the atmosphere. Newer switchgears have a very low leak rate and are subject to CARB regulations which provide for leak prevention methods to reduce emissions to levels consistent with the AB 32 Scoping Plan. As such, the potential for emissions of SF_6 from WSP solar projects is considered negligible.

The WSP solar and gen-tie projects would emit a total of 115,617 metric tons of CO_2e (Carbon Dioxide equivalents) over their estimated 30-year operational lifetimes. (Note: Since the first SGF would begin operation in 2018 and the last SGF would begin operation in 2030, the collective life of the WSP solar

facilities would be about 43 years, although individual solar facilities are assumed to have useful lives of 30 years.) Construction emissions, at 83,442 metric tons of CO_2e, represent 71 percent of total CO_2e, while operational emissions, at 32,175 metric tons of CO_2e, represent 29 percent of total CO_2e. The total CO_2e emissions annualized over the lives of the projects (30 years each) is equivalent to 3,851 metric tons per year of CO_2e for the entire WSP plan area. The GHG emissions associated with SGF decommissioning would be equivalent to approximately 75 percent of construction emissions (Kings County 2012). However, since many of the materials salvaged from deconstruction would be recyclable or reusable, these emissions would be largely offset by the avoided emissions associated with the manufacture of future equipment and components from virgin materials.

Upon completion, the 2,000 MW generated at the Westlands Solar Park would deliver approximately 5 million megawatt-hours per year (MWh/yr) of electricity to the grid. This electric power would be dispatched to the California Independent System Operator (CAISO) in accordance with a complex and dynamic formula that takes into account numerous variables in ongoing dispatching decisions to meet demand for electricity at any given time. One of those variables is compliance with the mandate to integrate electricity generated from renewable sources into the system at a predetermined rate, i.e., 50 percent by 2030 as mandated by the current California Renewables Portfolio Standard (RPS). Since fossil fuel sources are typically less expensive and more reliable than renewable sources at the utility scale, it is expected that in the absence of an RPS mandate, these fossil sources would continue to be the dominant fuel source for electrical generation in California. Thus renewable sources of electricity, such as solar generation, are considered to offset an equivalent amount of generation from other fuel sources, such as natural gas or coal, which would likely otherwise be dispatched by the CAISO in the absence of an RPS mandate. In other words, the installation and operation of solar facilities, such as those at the Westlands Solar Park, would result in a net reduction of fossil-based generation, and hence a net reduction in CO_2 emissions, relative to overall CO_2 emissions that would occur without the WSP solar projects.

In order to quantify the amount of net reduction in CO_2 emissions that would be represented by the WSP solar and gen-tie facilities, the CO_2 emissions from fossil-fueled plants with the same electrical output were considered for comparison. For example, a large combined cycle natural gas power plant rated at approximately 660 MWs is estimated to emit approximately 1.92 million metric tons/yr of CO2e. Scaled up to a 2,000 MW facility, the CO2e emissions would be approximately 5.82 million metric tons/yr. The total annual GHG emissions of 3,854 $MTCO_2e$ from WSP solar and gen-tie facilities would be 99.93 percent less than emissions from a fossil fueled plant with comparable generating capacity.

The emissions reductions associated with typical land development projects, such commercial or residential projects, can be quantified because business-as-usual baseline conditions can be readily established. For renewable solar PV projects, no baseline of business-as-usual condition has been established, so there is no way to measure emissions reductions against the SJVAPCD 29 percent reduction target for land development projects. However, as an electrical generating facility, it is reasonable to assume that in a business-as-usual scenario without AB 32 and RPS mandates, natural gas-fueled electrical generation would be favored over renewable generation given the comparative cost and reliability advantages of natural gas generation. Thus the natural gas power plant described above would reasonably represent BAU, and the WSP emissions reduction of over 99 percent would more than satisfy the 29 percent reduction target of the SJVAPCD.

In summary, the WSP solar facilities would result in a substantial reduction in GHG emissions compared to fossil-fueled power generation that would likely be dispatched in the absence of the RPS mandates.

Thus, while a relatively small amount of GHG emissions would occur during construction and operation of WSP solar facilities, the net effect would be beneficial in terms of impacts to global climate change. Therefore, the impact of a relatively small amount of GHG emissions resulting from WSP solar projects would be *less than significant*.

The primary purpose of the WSP gen-tie projects is to facilitate delivery of renewable generation to the grid, thus helping to reduce dependency on fossil-fueled generation. As such, the GHG emissions associated with the transmission projects are viewed in the context of the benefit provided by indirectly offsetting conventional nonrenewable generation sources. By enabling the delivery of 2,000 MW of solar generated power to the grid, the gen-tie projects would facilitate the reduction of 5.82 Million $MTCO_2e$ of annual GHG emissions that would otherwise be emitted from natural gas generation facilities with the same electrical output. As discussed for the WSP solar generating facilities above, the relatively small amount GHG emissions resulting from construction and operation of the gen-tie projects would be far outweighed by the amount of GHG emissions that would be avoided by their implementation. Therefore, the transmission projects would have a substantial net benefit in terms of GHG emissions, and the impact to global climate change would be *less than significant*.

Mitigation Measures:

***Westlands Solar Park*. No mitigation is required.**

***WSP Gen-Tie Corridors*. No mitigation is required.**

Impact AQ-9. Consistency with GHG Reduction Plans and Policies

***Westlands Solar Park*. The WSP solar projects would help achieve the state's GHG reduction plans and policies, and would not conflict with their implementation. (*Less-than-Significant Impact*)**

***WSP Gen-Tie Corridors*. The WSP gen-tie projects would help achieve the state's GHG reduction plans and policies, and would not conflict with their implementation. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criterion 'g' above.

Westlands Solar Park and WSP Gen-Tie Corridors

The Climate Change Scoping Plan adopted by the California Air Resources Board outlines the strategies for achieving the AB 32 emissions reduction targets. One of the key strategies is the Renewables Portfolio Standard (RPS), which requires all electric utilities in California to include a minimum of 33 percent renewable generation sources in their overall energy mix by 2020, and a minimum of 50 percent renewables by 2030. The solar photovoltaic generating facilities in the WSP would increase the proportion of renewables in the statewide energy portfolio, thereby furthering the implementation of RPS by the target year instead of hindering or delaying its implementation. The WSP solar generation increases the state's electrical supply and eases the retirement of existing older fossil-fueled generation plants. This resource shift avoids or offsets those sources of GHG emissions. Therefore, the impact of

WSP solar facilities in terms of conflicting with a plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases would be *less than significant*.

The primary purpose of the WSP gen-tie projects is to deliver renewable energy to the grid. In doing so, the transmission projects would help facilitate achievement of the state's AB 32 reduction targets, specifically by assisting in meeting the state's RPS mandate. Therefore, the impact of Westlands transmission projects in terms of conflicting with a plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases would be *less than significant*.

Mitigation Measures:

***Westlands Solar Park*. No mitigation is required.**

***WSP Gen-Tie Corridors*. No mitigation is required.**

Cumulative Impacts

Impact AQ-10. Cumulative Air Quality and Climate Change Impacts

***Westlands Solar Park*. Upon mitigation for air quality impacts associated with WSP solar development and other cumulative projects in the vicinity, the cumulative air quality impacts would be less than significant, and the contribution from WSP solar development would be not cumulatively considerable. (*Less-than-Significant Cumulative Impact with Mitigation*)**

***WSP Gen-Tie Corridors*. Upon mitigation for air quality impacts associated with other cumulative projects in the vicinity, the cumulative air quality impacts would be less than significant, and the contribution from WSP gen-tie projects would be not cumulatively considerable. (*Less-than-Significant Cumulative Impact*)**

Geographic Scope of Cumulative Impacts

The study area for cumulative air quality impacts is variable depending on the pollutant under consideration. For example, the study area for local pollutants such as Toxic Air Contaminants (TACs) extends a short distance from the project boundaries, while regional criteria pollutants such as NOx and ROG are basin-wide in their effects, and GHGs affect climate on a global scale. As such, each category of pollutants is discussed below in terms of the geologic scope that is applicable to that category.

Westlands Solar Park

Near-Term

Under near-term conditions, there are four approved and pending solar PV projects or groups of projects on lands adjacent to the WSP plan area, as listed below. (Note: The Westside Solar project and Westlands Aquamarine solar project, shown in Figure PD-9, are located within the WSP plan area. However, since the impacts associated with these projects are addressed in the WSP impact analysis, they are not included again in the list of cumulative projects below.) These solar projects are shown in Figure PD-9 and described in Table PD-9, in Chapter *2. Project Description*.

- Mustang/Orion/Kent South
- American Kings Solar
- Mustang 2 Solar
- Kettleman Solar

While there are other cumulative projects in the region, as listed in Tables 9 and 10, these projects are too far from WSP to contribute to a cumulative impact in terms of localized pollutants, and cumulative impacts for regional pollutants would not be significant per SJVAPCD criteria, as discussed in the next paragraph.

Regarding regional criteria pollutants, SJVAPCD guidance indicates that cumulative impacts for ozone precursors ROG and NOx would be considered significant only if the project-specific emissions exceed the applicable SJVAPCD significance thresholds, or if the project is not consistent with the regional clean air plan. As discussed in Impact AQ-2 above, project-specific emissions of ROG) and PM_{10} were found to be less-than-significant, and that emissions of NOx were found to be less than significant after implementation of MM AQ-2. As discussed under Impact AQ-7 above, the WSP solar projects would be consistent with clean air planning efforts and would not conflict with or obstruct their implementation, with mitigation incorporated (i.e., implementation of MM AQ-2). Therefore, the project contribution to cumulative regional air quality impacts in the near term would be would be *less than significant with mitigation*.

Emissions of PM_{10} and $PM_{2.5}$ during construction would be local in their effects. As shown in Table AQ-6 above, the PM_{10} dust emissions from the WSP projects would exceed the PM_{10} significance threshold of 15 tons without dust controls specified in MM AQ-1, which would reduce emissions to less-than-significant levels. As shown in Table AQ-7, the PM_{10} construction exhaust from the WSP solar projects would be well below the PM_{10} significance threshold of 15 tons, and therefore would be less than significant. As mentioned, there are four other approved solar projects in the immediate WSP vicinity, of which two have been completed (Mustang/Orion/Kent South, Kettleman), and two have not yet commenced construction (American Kings, Mustang 2). Depending on construction schedules, the construction of the one or more SGFs in Westlands Solar Park could overlap with the construction of one or more of these other proximate solar projects. By the time the first WSP solar project commences construction, it is assumed that the American Kings and Mustang 2 projects may be under construction at the same time as the first WSP solar project. As with the WSP solar projects, the PM_{10} exhaust emissions at each cumulative project would be very low, and even when combined would not exceed the applicable threshold. The implementation of dust control measures required for each project under SJVAPCD Regulation VIII (as specified in MM AQ-1 above for the WSP projects) would reduce PM_{10} emissions from each of these projects to below the 15 ton per year significance threshold. It is possible

that the combined PM_{10} emissions from the American Kings, Mustang 2, and first WSP solar project could exceed 15 tons per year of total PM_{10} (i.e., fugitive dust plus exhaust emissions) although the 15 ton threshold for exhaust component of PM_{10} would not be exceeded. Where PM_{10} dust emissions from unrelated projects may occur, the SJVAPCD would employ a qualitative approach to determine if enhanced dust suppression measures may be necessary. The need for enhanced dust control would be determined by the SJVAPCD on a case-by-case basis in conjunction with its review and approval of the Dust Control Plans for each project. This process would ensure that cumulative PM_{10} emissions would be less than significant.

In considering the geographic extent of TAC impacts, it is important to note that DPM concentrations diminish rapidly from the source. Pollutant dispersion studies have shown that there is about an 80 percent drop off in DPM concentrations at approximately 1,000 feet from the source. Therefore, only projects under construction in the immediate vicinity of the WSP would have the potential to contribute to a cumulative TAC impact. As discussed above, the American Kings and Mustang 2 solar projects may be under construction at the same time as the first WSP solar project. The first SGF in WSP (i.e., SGF 1) is expected to be constructed in the northeast corner of the WSP plan area, which is directly south of the American Kings and Mustang 2 projects. As such, all three projects could potentially contribute to emissions of TACs at the same time. The multiple sources of DPM emissions must all be proximate to a receptor to have an additive effect to DPM concentrations at the receptor site. The nearest residential receptors to the SGF 1 site are located 2.5 miles southwest (Shannon Ranch) and 2.5 miles north (residences at NAS Lemoore). The nearest residential receptors to the Mustang 2 site are located 1.3 miles east (rural residence) and 2.0 miles north (residences at NAS Lemoore). The nearest residential receptors to the American Kings site are located 350 feet north (residences at NAS Lemoore). Although the residences at NAS Lemoore may be temporarily subject to DPM emissions from nearby construction at the American Kings project, it is not expected that this would result in significant increase in lifetime cancer risk to the affected residents. The DPM emissions from the SGF 1 and Mustang 2 projects would be too far from these receptors to make any contribution to the DPM exposure at NAS Lemoore since most if not all DPM emissions from these projects would disperse into the atmosphere before reaching these receptor locations. All of the other nearest residential receptors are at least one mile from any of the three projects, distances at which DPM concentrations would be negligible. Therefore, cumulative emissions of DPM or TACs are not anticipated to result in a significant increase in risk to exposed persons. As such, the cumulative impact in terms of health risk would be *less than significant*, and the project contribution would be *not cumulatively considerable*.

With respect to climate change impacts, the overall effects of GHG emissions are considered to be cumulatively significant only at the global level, and project-level impacts are considered significant if a project makes a considerable contribution to the cumulative impact. As discussed, the construction and operation of the WSP solar projects would generate some greenhouse gas emissions from fossil-fueled vehicles and equipment; however, these emissions would be more than offset by the avoided greenhouse gas emissions resulting from the WSP projects' renewable electricity generation. Since all of the cumulative projects are also solar PV generating facilities, they would each result in a net benefit to climate change by offsetting an equivalent amount of fossil-fueled power generation. Thus none of the cumulative projects, including the WSP solar projects, would make a considerable contribution to the cumulative climate change impact. Therefore, the cumulative impact to climate change would be *less than significant*, and the project contribution would be *not cumulatively considerable*.

In summary, the near-term cumulative impact to air quality associated with WSP solar development would be *less than significant with mitigation (i.e., for fugitive dust and NOx emissions during construction)*.

Far-Term

To evaluate far-term conditions, the cumulative analysis of air quality impacts considers the full buildout of land uses in the vicinity of the WSP plan area as shown on the 2035 Kings County General Plan and the Fresno County General Plan (which covers lands immediately to the west). The 'Kings County Land Use Map' of the Land Use Element shows that Kings County lands near the WSP plan area are designated as either 'General Agriculture 40 ac.' or 'Exclusive Agriculture 40 ac.' Similarly, the Fresno County General Plan shows the lands near the WSP plan area are designated 'Agriculture.' Thus it is reasonable to assume that agricultural production will remain the dominant land use in surrounding lands for the life of the General Plans.

It is important to note that, as with the lands of the WSP plan area, the agricultural designations of the 2035 Kings County General Plan allow the installation of utility-scale PV solar generating facilities (Kings County 2010). Thus it is possible that additional solar development projects could be proposed in the WSP vicinity within the 25 year planning horizon of the General Plan. Since the adjacent lands to the west of the WSP site are located within Fresno County, the corresponding General Plan designations for Fresno County lands would guide permitted uses on adjacent lands to the west. While the Fresno County General Plan does not specifically allow PV solar development on agriculturally-designated lands, the County has initiated a process for considering solar PV development on agriculturally-designated lands, and has approved a number of solar PV projects under this process (Fresno County 2011). Although few solar projects have been proposed, approved, or constructed in the southwestern Fresno County to date (e.g., Westlands Solar Farm, PG&E's Gates Solar, PG&E's Huron Solar), it is reasonable to assume that Fresno County would consider proposals for PV solar development on agricultural lands near the WSP plan area. Thus it is anticipated that any development on nearby lands would consist predominantly, if not exclusively, of solar PV projects.

As discussed for near-term conditions above, cumulative impacts would be considered significant only if the project-specific emissions for ozone precursors ROG and NOx exceed the applicable SJVAPCD significance thresholds, or if the project is not consistent with the regional clean air plan. As discussed in Impact AQ-3 above, WSP solar project emissions of ROG and PM_{10} were found to be less-than-significant, and emissions of NOx were found to be less than significant after implementation of MM AQ-2. . As discussed under Impact AQ-7 above, the WSP solar projects would be consistent with clean air planning efforts and would not conflict with or obstruct their implementation, with mitigation (i.e., implementation of MM AQ-2). In the far term, emissions rates for criteria pollutants will be substantially lower than in the near term due to mandated increases in fuel efficiency and technical advances in emissions control. Given these anticipated reductions in emission rates, it is unlikely that even the largest WSP solar project constructed in the far term would exceed the significance thresholds for regional pollutants. Therefore, the project contribution to cumulative regional air quality impacts in the far term would be *not cumulatively considerable* and the project's cumulative impacts would be *less than cumulatively significant*.

Emissions of PM_{10} and $PM_{2.5}$ during construction would be local in their effects. As shown in Table AQ-6 above, the PM_{10} dust emissions from the WSP projects would exceed the PM_{10} significance threshold of 15 tons without dust controls specified in MM AQ-1, which would reduce emissions to less-than-

significant levels. As shown in Table AQ-7, the PM_{10} construction exhaust from the WSP solar projects would be well below the PM_{10} significance threshold of 15 tons, and therefore would be less than significant. Assuming that other currently unforeseen solar PV projects would be proposed for lands adjacent to the WSP plan area in the far term, the PM_{10} exhaust emissions would be very low, and implementation of dust control measures required for such projects under SJVAPCD Regulation VIII (and MM AQ-1 for WSP projects) would reduce PM_{10} emissions from each such project to below the 15 ton per year significance threshold. (Although large reductions in exhaust pollutant emission rates are mandated and expected to be in effect in the far term, it is not expected that dust emissions from construction will be reduced substantially in the far term compared to reductions achievable with current dust controls.) It is possible that the combined PM_{10} emissions from future projects and the final WSP solar projects could exceed 15 tons per year, although the 15 ton threshold for exhaust component of PM_{10} would not be exceeded. As noted above, where PM_{10} emissions (as fugitive dust) from unrelated projects may occur, the SJVAPCD would employ a qualitative approach to determine if enhanced dust suppression measures would be necessary. The need for enhanced dust control would be determined by the SJVAPCD on a case-by-case basis in conjunction with its review and approval of the Dust Control Plans for each project. This process would ensure that cumulative PM_{10} emissions would *be less than significant* in the far term, but with mitigation incorporated in the form of dust controls.

In considering the geographic extent of TAC impacts, it is important to note again that DPM concentrations diminish rapidly from the source. Therefore, only projects under construction in the immediate vicinity of the WSP would have the potential to contribute to a cumulative TAC impact. Under worst case conditions in the far term, one or more future solar PV projects could be proposed on adjacent lands to the east or south of the WSP plan area, near receptors at Shannon Ranch or the Stone Land Company Ranch. However, as discussed in Impact AQ-5 above, even where sensitive receptors are virtually surrounded by solar development projects, the TAC levels at the maximally exposed receptors would not rise to the level of a significant health risk. Given the mandated reductions in emissions rates from diesel equipment, the TAC emissions in the far term are expected to be significantly lower than current emissions rates, thus lowering the health risk even further. Therefore, cumulative emissions of DPM or TACs in the far term are not anticipated to result in a significant increase in risk to exposed persons. As such, the far-term cumulative impact in terms of health risk associated with WSP solar development would be *less than significant*.

With respect to climate change impacts, the overall effects of GHG emissions are considered to be cumulatively significant only at the global level, and project-level impacts are considered significant if a project makes a considerable contribution to the cumulative impact. As discussed under Impact AQ-8, the construction and operation of the WSP solar projects would generate some greenhouse gas emissions from fossil-fueled vehicles and equipment; however, these emissions would be more than offset by the avoided greenhouse gas emissions resulting from the WSP projects' renewable electricity generation. Since cumulative projects would also likely consist exclusively of solar PV generating facilities, they would each result in a net benefit to climate change by offsetting an equivalent amount of fossil-fueled power generation. Thus none of the cumulative projects, including the WSP solar projects, would make a considerable contribution to the cumulative climate change impact in the far term. Therefore, the cumulative impact to climate change in the far term would be *less than significant*, and the project contribution would be *not cumulatively considerable*.

In summary, the far-term cumulative impact to air quality and climate change associated with WSP solar development would be *less than significant with mitigation (i.e., construction dust controls)*.

WSP Gen-Tie Corridors

Near Term

Under near-term conditions, there is one pending solar project and two planned transmission projects on lands adjacent or proximate to the WSP gen-tie corridors under near-term conditions. These projects are shown of Figures PD-10, and briefly described in Table PD-10, in Chapter *2. Project Description*.

- EC&R Solar Project
- Central Valley Power Connect (CVPC)(Gates to Gregg Transmission Project)
- Westside Transmission Project (Gates to Dos Amigos/Los Banos Substation)

It is noted that the CVPC transmission project has been placed on hold and may not move forward. However, for purposes of this analysis, it is considered an active pending project and thus is included in this cumulative analysis. As discussed above, cumulative impacts for regional criteria pollutants would be considered significant only if the project-specific emissions exceed the SJVAPCD significance thresholds for ozone precursors ROG or NOx, or if the project is not consistent with the regional clean air plan. As discussed under Impacts AQ-2 and AQ-3 above, project-specific emissions of ozone precursor pollutants (ROG and NOx) and PM_{10} during both construction and operation were found to be less-than-significant, without mitigation. As discussed under Impact AQ-7 above, the WSP gen-tie projects and related facilities would be consistent with clean air planning efforts and would not conflict with or obstruct their implementation. Therefore, the project contribution to cumulative regional air quality impacts in the near term would be *not cumulatively considerable* and the cumulative impacts associated with the transmission and related projects would be *less than significant*.

Emissions of PM_{10} and $PM_{2.5}$ during construction would be local in their effects. As shown in Table AQ-6 above, the PM_{10} construction exhaust from the WSP gen-tie projects would be well below the PM_{10} significance threshold of 15 tons, and the PM_{10} dust emissions from the gen-tie projects would also be well below the PM_{10} significance threshold of 15 tons. As listed above, there is one solar project and two planned transmission projects in the immediate vicinity of the WSP gen-tie corridors. Depending on construction schedules of the other projects, the WSP gen-tie projects could overlap with the construction of one or more of these other proximate projects. If one or more of these other projects are constructed concurrently with the WSP gen-tie projects, it is unlikely that the combined PM_{10} emissions (i.e., fugitive dust and exhaust) from the nearby projects, including the WSP gen-tie projects, would exceed 15 tons per year. Given the far-flung and low intensity nature of transmission line construction, the cumulative transmission projects would result in very low PM_{10} emissions. The one cumulative solar project may result in PM_{10} dust emissions that exceed 15 tons per year, but the impact would be reduced to less-than-significant levels through implementation of SJVAPCD Regulation VIII (which would be required even if Fresno County did not specifically require it as a CEQA mitigation measure). Therefore, cumulative PM_{10} emissions would be less than significant. In any event, the contribution of the PM_{10} emissions from the gen-tie projects would not be cumulatively considerable and would therefore not require mitigation for cumulative impacts.

In considering the geographic extent of TAC impacts, it is noted again that DPM concentrations diminish rapidly from the source, decreasing by about 80 percent at approximately 1,000 feet from the source. Therefore, only projects under construction in the immediate vicinity of the WSP gen-tie projects would have the potential to contribute to a cumulative TAC impact. As discussed above under Impact AQ-5 above, the construction of the gen-tie projects would be focused on the transmission towers which

would be placed about 1,300 feet apart, on average. Construction activity would move quickly along the transmission corridors, and the duration of construction at any one tower site would be brief, about 1 to 2 weeks. This low intensity of the construction activity is reflected in the very low levels of PM_{10} emissions (as exhaust) shown in Table AQ-6. As discussed under Impact AQ-5, the maximally exposed receptor along the WSP gen-tie corridors would be exposed to very low TAC levels, which would be far below the levels indicative of a significant health risk. The only potential situation where a WSP gen-tie project would be constructed near one of the other cumulative transmission projects is if the northern WSP gen-tie project were to be constructed at the same time as the adjacent segment of the Gates to Gregg transmission project (Central Valley Power Connect), or the adjacent EC&R solar project. The northern gen-tie corridor would run parallel and one of the alternative routes for the adjacent CVPC transmission project along its entire 11.5-mile corridor. There are 10 rural residences located between 0.3 and 0.9 miles from this corridor, with the nearest residence located 1,600 feet from the northern gen-tie corridor. At these distances, the DPM concentrations would dissipate to very low levels. Thus the TAC emissions from construction of the nearest transmission tower to the common receptor, combined with the TAC emissions from construction of an adjacent transmission project, would be far below the significance level that defines a significant health risk. If the western portion of the northern gen-tie line were to be constructed at the same time as the nearby portions of the EC&R solar project, there is a potential for both projects contribute to cumulative TAC levels. However, the nearest common residential receptor is located 1,200 feet from the northern gen-tie corridor and 400 feet from the nearest portion of the EC&R project site. Given the distance from this receptor site to the northern gen-tie site, and the very brief duration of construction along the nearest segment of the gen-tie line, there is little or no potential for the gen-tie construction to contribute to a cumulative TAC impact. Therefore, the cumulative health risk due to emissions of diesel particulate matter from construction of the WSP gen-tie projects in the near term would be *less than significant*.

With respect to climate change impacts, the overall effects of GHG emissions are considered to be cumulatively significant only at the global level, and project-level impacts are considered significant if a project makes a considerable contribution to the cumulative impact. As discussed under Impact AQ-8, the construction and operation of the WSP gen-tie projects would generate low levels of greenhouse gas emissions from fossil-fueled vehicles and equipment; however, these emissions would be more than offset by the renewable energy that would be delivered by the gen-tie projects to the grid to offset fossil-fueled generation. As such, the WSP gen-tie projects would result in a net benefit to global climate. The cumulative projects consist of other transmission projects, which would generate relatively small amounts of GHGs during construction and negligible GHGs during operation. Therefore, the contributions of the gen-tie projects would *not be cumulatively considerable* on an individual basis, and therefore the cumulative climate change impact associated with the WSP gen-tie projects in the near-term would be *less than significant*.

In summary, the near-term cumulative impact to air quality and climate change associated with the WSP gen-tie projects would be *less than significant*.

Far Term

Under far-term conditions, it is assumed that all of the near-term cumulative projects, including the WSP gen-tie projects, would be completed. As discussed, all adjacent and nearby lands are designated for agricultural uses in the county general plans. While both counties allow solar PV projects on agriculturally-designated lands, it is not foreseeable which lands, if any, adjacent to the gen-tie corridors will be proposed for solar PV development in the far term. Also, additional transmission facilities or other public

utility uses could be planned for adjacent lands, but the details of any such projects are also unforeseeable at this time. However, this far-term analysis assumes that some solar PV development and additional transmission projects will be constructed in the project vicinity in the far term. However, it is not anticipated that other non-agricultural development would occur in the vicinity of the Westlands transmission corridors under far-term conditions.

Given the relatively low intensity of the construction and operational activity associated with the cumulative development anticipated in the far term, i.e., solar projects and transmission projects, the emissions of air pollutants and greenhouse gases are also expected to be very low. The far-term cumulative projects would not be expected to exceed any thresholds of significance for air quality, either individually or cumulatively. As such, the far-term cumulative impacts to air quality and climate change associated with the WSP gen-tie projects would be *less than significant*.

Mitigation Measures:

***Westlands Solar Park*. No additional mitigation is required. (Implement MM AQ-1 and MM AQ-2.)**

***WSP Gen-Tie Corridors*. No mitigation is required.**

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